THE IRON AGE

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JULY 2, 1936

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A Red Flag on the Recovery Track

AS steel goes, so goes the nation. This paraphrase of a political aphorism, given an economic twist, is food for thought for all those who labor with mind or hand in the "capital goods" industries.

When the steel business of America is depressed, no one can expect a normal measure of prosperity. For steel is the barometer of capital goods activity. Increasing activity in steel means that manufacturers and makers of thousands of long-lived products are facing increased demands which in turn call for increasing quantities of our greatest basic metal.

This is the reason why every important newspaper in the United States carries the weekly estimate of ingot production as a regularly featured news item. And this is why thousands of economists, statisticians and business forecasters use the trend of steel, as expressed in this weekly index, in looking ahead for business planning.

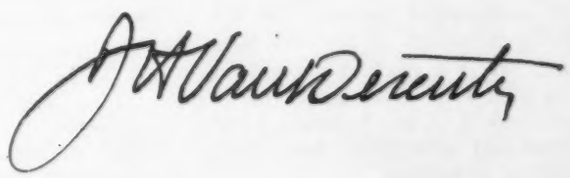
Since the heavy hand of regimentation has been removed from steel and other capital goods industries by the Supreme Court, there has been a steady, astonishing and encouraging increase in the rate of ingot production. Every additional ton of this increase means not only an additional week's work for some man in the steel industry but is multiplied at least fourfold in employment effect in mining, transportation and in the subsequent fabrication or manufacture of the metal into useful products.

Thus, employment in durable goods, where unemployment during the depression has been greatest, is affected in multiple measure by steady gains in steel production.

Call this cause or effect, as you please, the fact remains that when steel prospers, America prospers; when steel falters, America suffers.

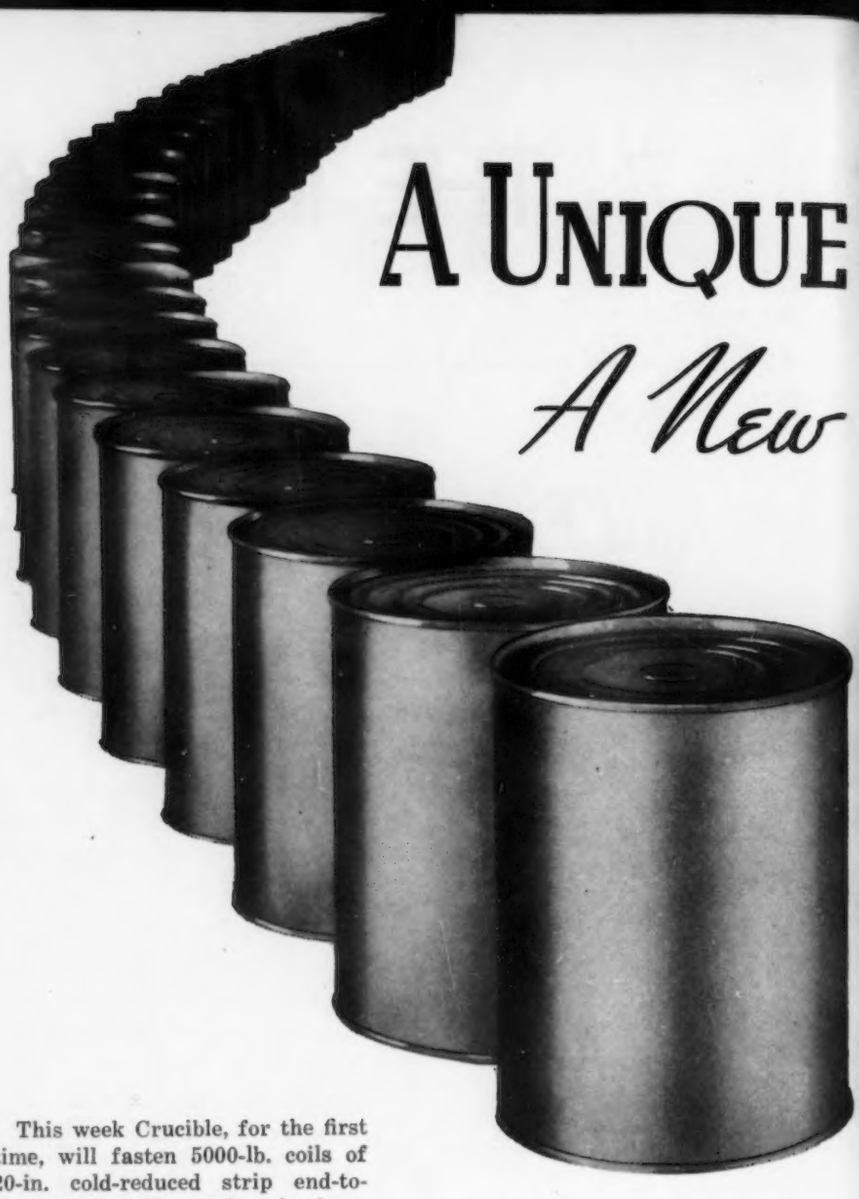
American citizens in all walks of life should ponder upon these facts at this time. For now less than ever in our economic history, should we permit the incoming tide of prosperity to be turned to ebb through an unwarranted and inexcusable labor warfare—a warfare promulgated not by the desire to right wrongs but to build up a dominating labor dictatorship determined to rule or ruin.

The average man, outside of the industry, has too much at stake in steel to permit personal ambition to so disastrously seek such ends.



A UNIQUE

A New



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By T. W. LIPPERT

Metallurgical Editor, THE IRON AGE

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Uniqueness: *Electro-Deposited Tin Plate Emerges from the Laboratory, and, for the First Time, Is to Become a Commercial Product.*

New Producer: *Crucible Steel Co. of America Completes Large Midland, Pa., Addition for Its Initial Venture Into the 1,800,000 Ton Tin Plate Market.*

Characteristics: *Electro-Tinning Minimizes Porosity, 5000-lb. Coils Are Continuously and Uniformly Coated, and Other Defects Are Avoided.*

ACCORDING to Noah Webster a surprise is "something unexpected." Therefore, the Pittsburgh Crucible Steel Co., a subsidiary of Crucible Steel Co. of America, may rightfully assume that it is about to deal out a welcome surprise to the tin plate consumer. For at Midland, Pa., this company has quietly erected a large plant; it has installed a reversing cold mill, a vertical electrical annealing furnace, a number of coilers and uncoilers, a large complement of plating tanks, an electrical sub-station and other auxiliary machines. This building and this equipment comprise the first commercial venture for the electro-deposition of tin onto strip steel. It is a confident step by a tyro in the tin plate game that it will succeed in an operation which entrenched companies have hesitated to undertake.

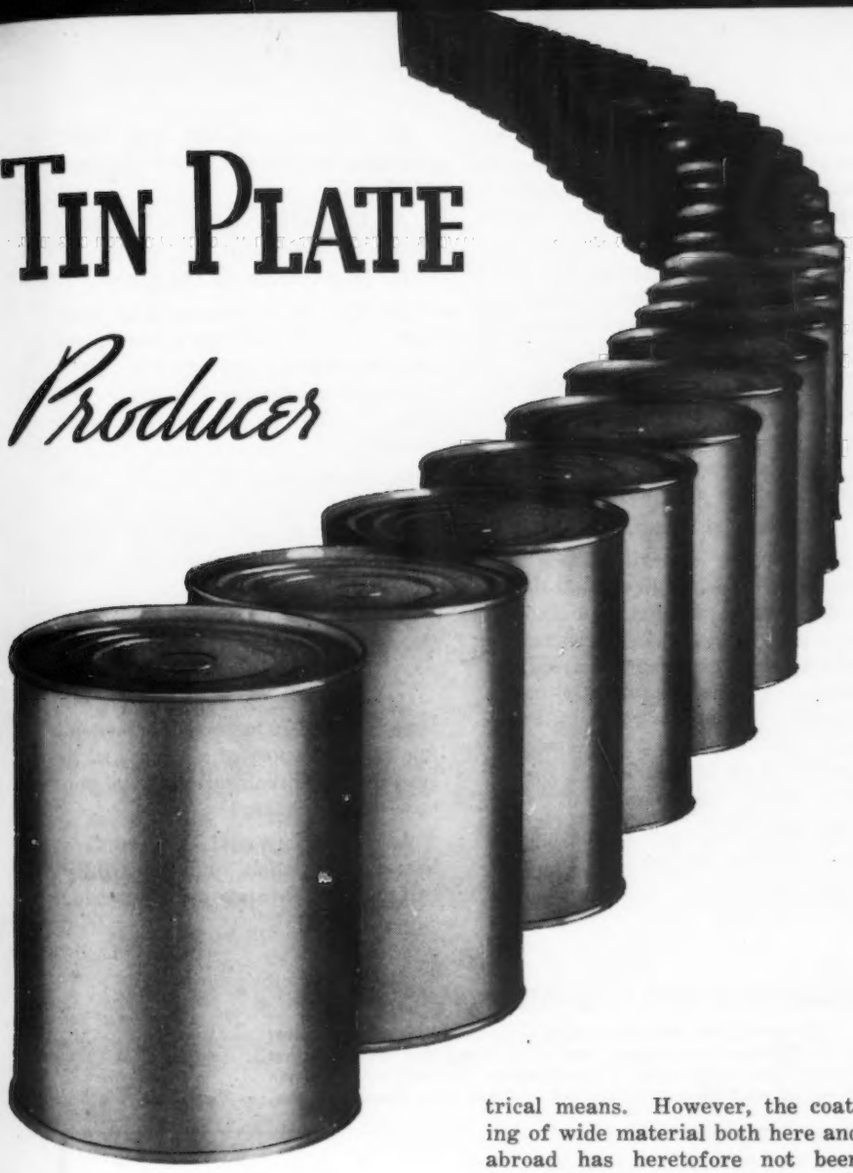
This week Crucible, for the first time, will fasten 5000-lb. coils of 20-in. cold-reduced strip end-to-end and start the steel on its journey through tin plating baths and processing equipment. Ingots will be reduced to blooms at Midland, the blooms sent to a nearby continuous hot mill for reduction to strips, and the strips returned to Midland for cold rolling on a 26-in. reversing mill. At the discharge end the company states it will have a continuous roll of tinned strip steel with the following laboratoy-established attributes: (1) Continuous and uniform coating, (2) dense and lustrous tin structure with almost complete freedom from pores, (3) elimination of pickling embrittlement and concomitant improvement in deep drawing qualities, (4) a surface layer of pure tin; therefore improved corrosion resistance, and (5) avoidance of grease lines, mottle and isolated $FeSn_2$ crystallites.

Initial Capacity Comparatively Small

Crucible is confident that these broad claims will have emerged completely from the laboratory to the commercial unit. Whatever the output of this new plant will be, it will figuratively speaking be merely a drop in the bucket as compared with normal national consumption of 35,000,000 base boxes yearly. Nevertheless, since electrodeposition fully meets the confident claims of its sponsor, the initial production is of little significance —nor is it very important whether early shipments do or do not carry price premiums. Of primary importance is the fact that a desirable standard may be set up. And the tin plate industry is fully and a little wryly aware of the potent influence of a high standard; for it has just passed through an upheaval generated by the first cold reducing mill.

Thus it is not impossible that the conventional hot-dip tin plate industry may have an incipient revolution on its hands—the first

TIN PLATE *Producer*



radical change in a product which has been familiar for centuries and is today made in essentially the same manner as it was in 77 A.D., at which time Pliny the Elder mentioned hot-dip tin coatings in his "Natural History."

The United States was long dependent on the British Isles for its tin plate, inasmuch as systematic development did not occur in this country until 1890, ten years before the birth of the Crucible Steel Co. of America. However, there was some tin plate produced here commercially as early as 1873, at Wellsville, Ohio, and it is somehow fitting that the first potentially radical change in tin plate manufacture should take place at nearby Midland.

The industry has generally recognized the inevitability of continuous tinning and galvanizing of strip-sheets, all probably by electrical means. However, the coating of wide material both here and abroad has heretofore not been physically and economically successful, even in experimental lots. Thus it is only natural that great interest is engendered by Crucible's apparent success. The demand is for specific operating data. But for obvious reasons Crucible is loath to reveal these data. J. S. Nachtman, well-known electrochemist, previously with Thomas Steel Co. as superintendent of the plating and electro-chemical division, has a similar position with Crucible, and is in charge of the new electro-tinning plant. The following interview with Mr. Nachtman elicited all the obtainable information regarding electro-deposition activities within Crucible's closely policed plant:

Operation Described

Q: After the strip leaves the reversing four-high cold mill, what is the next operation?

A: It travels through a slitter which trims off the edges, giving a continuous strip 20 in. wide. Even wider strip will be made in the future.

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Q: What is the next operation?

A: The strip is coiled.

Q: Then what happens?

A: The coils are transferred to reels at the end of a plating trough. As the strip passes through this trough, it is fastened end-to-end to obtain a continuous flow of steel.

Q: Is the plate which is applied in this operation the complete tin coating?

A: No, it is an electro-chemical treatment to assure proper fusion of the tin with the base metal, and also, to prepare the surface for the subsequent tin coating.

Q: What kind of treatment is it?

A: We do not care to say. It might be mentioned, however, that there are four possibilities of electro-chemical priming treatment. Which one or ones are finally selected will depend on the relative ultimate fabricating characteristics of the four. That is, we will let our customers tell us which treatment gives the best results rather than give them a product having a treatment we think they should prefer.

Q: Do these treatments have a tin base or are any of them pure tin?

A: Perhaps yes, perhaps no.

Q: Other than assure fusion and serve as a basis for the final coating, has this treatment any other purpose?

A: Yes. It eliminates the necessity for pickling after annealing thereby avoiding embrittlement; the buyer thus has less scrap loss when making deep drawn products.

Q: What is the next operation?

A: After the steel has been treated electro-chemically, it is dried and again coiled. Then it is transferred to a continuous vertical electrical annealing furnace. It passes up to the top and then down

through this furnace, and, as it leaves the furnace, it is skin rolled.

Q: The annealing furnace probably has a reducing atmosphere.

A: Yes.

Q: Then what?

A: The strip is again coiled.

Q: Why all the coiling and uncoiling? Why not a continuous travel from one operation to the next?

A: Some operations are faster than others. For instance, the strip passes through the electrochemical treating bath much faster than it does the annealing operation. In practice, the annealing furnace will operate continuously, whereas the electro-chemical treating will be intermittent. Subsequently, another furnace may be installed to give more continuous intra-plant operation.

Q: Following the annealing and skin pass, the tin probably is plated on.

A: Yes.

Q: In this country, refrigerator parts are plated with tin and an alkaline bath is used. Furthermore English experiments have shown an alkaline tin plating bath preferable to an acid bath when flash coats are put over hot-dipped coatings in order to improve luster and reduce porosity. You probably use an alkaline bath.

A: No.

Q: An acid bath would be the only alternative.

A: Yes.

Q: Perhaps you use a chloride bath (100 gm. crystalline stannous chloride, 5 gm. phenolsulphonic acid, 5 c.c. hydrochloric acid, and 10 c.c. sulphuric acid per litre of solution. High current density (20) generally used).

A: No.

Q: Or, do you use an oxalate bath (25 gm. crystalline stannous chloride, 56 gm. ammonium oxalate, 30 gm. oxalic acid, 0.5 gm. gelatin per litre of solution. Moderate current density (6) generally used)?

A: No.

Q: Would it be practicable to employ one of several variations of a pyrophosphate bath (low current density (1.5) generally used)?

A: No.

Q: Would any of the above solutions be usable for your process?

A: No! It has been necessary to evolve a completely new electrolyte and processing treatment. In any case, the process or surface preparation is much more important than the bath analysis.

Q: Surface preparation? The same applies to a recent method of electroplating steel with aluminum. Are the two similar?

A: Similar only that correct surface preparation is of major importance.

Q: What current density do you intend to use for plating the tin?

A: About 150 amp. per sq. ft.

Q: Other experiments have shown that such high current densities result in a rapid drop in current efficiency. Also, high current density generally causes excess gas discharge which apparently has a tendency to increase porosity. Probably you have found some way to obviate these tendencies.

A: That is right.

Q: Have you tested your laboratory samples for porosity?

A: Yes.

Q: Do you use the hot water porosity test or the ferroxyl paper method?

A: The ferroxyl paper has been found satisfactory.

Q: How porous is the plate?

A: Pin point counts are very low, as compared with counts on representative hot-dip tin plate currently on the market. It is not difficult for us to obtain zero porosity.

Q: Some experiments in this country on the electro-deposition of tin onto strip have given coatings too soft for deep drawing. Are your coatings hard?

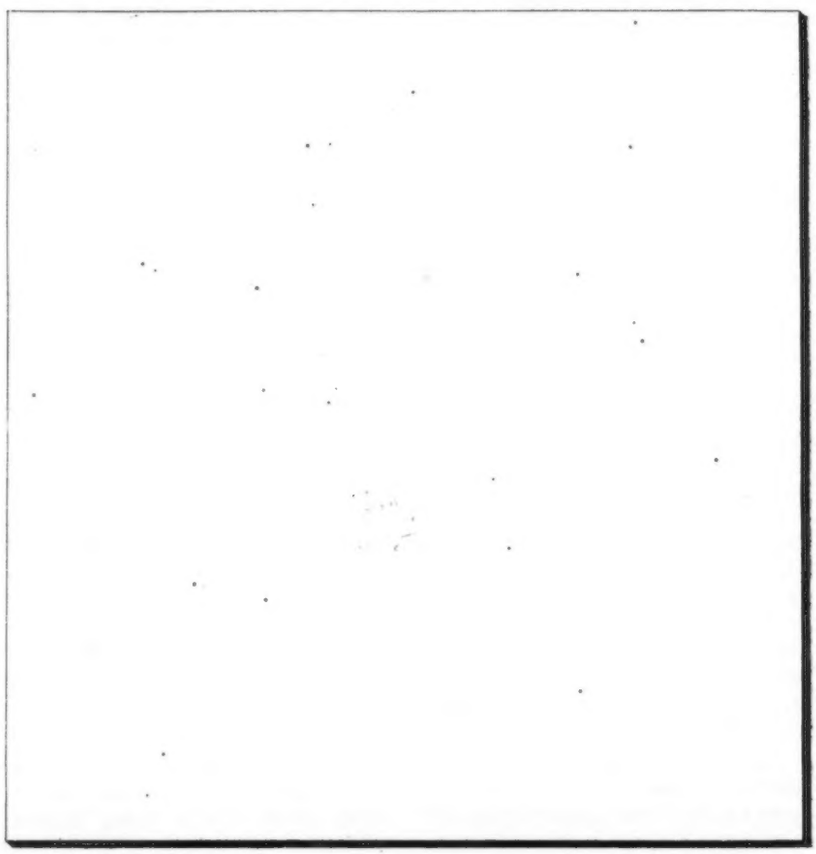
A: Yes, relatively very hard. The tinned steel withstands very deep draws.

Q: Other experimenters have found that their methods of hardening electro-deposited surfaces have resulted in discoloration. Do you have discoloration?

A: Absolutely not! The surface has a high polish, and beautifully lustrous appearance even superior

NEGLIGIBLE PORE COUNTS—

such as this has been secured by Crucible with various electro-tinned experimental specimens. It is stated that even a further reduction in porosity is practicable. The original specimen measured 11½ x 11¾ in., but is shown here one-fourth size. o o o



to the best hot-dip charcoal tin plate.

Q: Undoubtedly, you perform some operation on the electro-deposited tin after it leaves the plating baths.

A: This treatment is an important part of the cycle. It densifies and smooths the surface and greatly decreases latent porosity.

Q: Is there a final polishing operation?

A: It is not necessary.

Q: Will the electro-tinned plate be sold in coils or in usual cut sizes?

A: Either way, just as buyers desire.

Q: Practically no user is equipped to handle coils. Therefore, most of the initial output will go out in sheared form.

A: Probably. Although users may soon see a big advantage in coils.

Q: Generally it is useless to examine a sectioned edge of tin plate to study the $FeSn_2$ alloy at the interface, due to the extreme attenuation of the compound. However, selective dissolution has shown that for hot-dip coatings the tin penetration is about 0.000003 in. and the total alloy fringe measures about 0.00002 in. Would a microscopic examination of your electro-tinned surface show a line of demarkation or would there be a similar alloy fringe of alloy?

A: Alloy at the interface is desirable, and the electro-tinned plate shows a narrow alloy band. The sectioned specimen, however, has one distinguishing characteristic—the outer surface is 100 per cent pure tin, whereas usual hot-dip coatings have an outer surface slightly poisoned by other elements.

Q: You probably can vary the thickness of your tin coating at will.

A: Yes. The process is exceedingly flexible. Tin coatings can be varied from ¾ lb. per base box (0.000045 in. thick) up to such a thickness that the product would never rust even if it were to be in humid atmosphere for years.

Q: You probably won't make an absolutely perfect product to compete with hot-dip coatings.

A: The demands of consumers will be the determining factor.

Q: Copper refrigerator parts are coated electrically with tin to a thickness of 0.0005 in. to guarantee against porosity. Do your coatings ever run this thick?

A: It is not necessary.

Q: English experiments have shown that it takes 0.0006 in. of tin electro-deposited on 0.00009 in. of hot-dip coating to obtain zero porosity. This probably has little commercial significance.

A: No, the tin cost alone would be excessive.

Q: Your present width limit is 20 in., but you are probably pointing toward wider strip sheets.

A: We hope eventually to turn out a uniform product 72 in. wide.

Q: Are you currently ready to turn out any other type of coating?

A: A certain plate particularly suitable for beer cans is being considered.

Q: Any other coating?

A: Probably terne and other alloys.

Q: Electro-deposited alloys?

A: Yes!

Q: Your tin plating procedure is probably patented.

A: Full patent coverage is pending and soon will be issued.

BETTER THAN AVERAGE—

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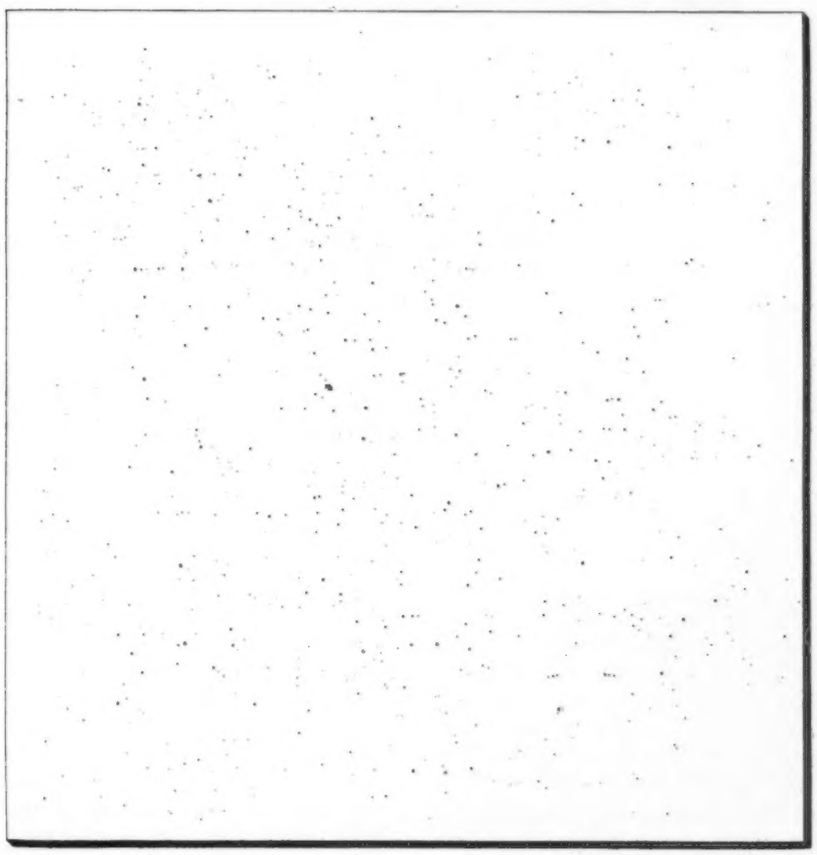


hot-dip tin plate. This specimen measured 11½ x 11¾ in., but is shown here one-fourth size. Each dot represents a minute cavity extending through the tin coating to the steel base. Many of these dots have been enlarged to secure proper reproduction.

Function of Tin Plate

As background material to supplement the foregoing questions and answers, it is probably advisable to set forth a few generalizations regarding tin plate. These generalizations should suffice to explain the importance attached to any new method of coating steel with tin, particularly if the new method has commercial possibilities of turning out a product having minimum porosity.

A minor reason for coating steel with tin is to improve the appearance, but by far the major reason for such an operation is to protect the iron or steel from corrosion. Furthermore, tin has proved itself a very satisfactory metal for enclosing fruits and foods, that is, minute quantities of tin have no harmful influence on the human

(CONCLUDED ON PAGE 84)

Bethlehem Opens Continuous Mill

ON Tuesday, June 30, Bethlehem Steel Co. officially "opened" its new continuous strip, sheet and plate mill at Lackawanna, N. Y. This newest Bethlehem plant unit, involving an investment of $20,000,000, represents the present day "last word" in the coordination of mechanical and electrical equipment for the production of hot and cold rolled flat steel products.

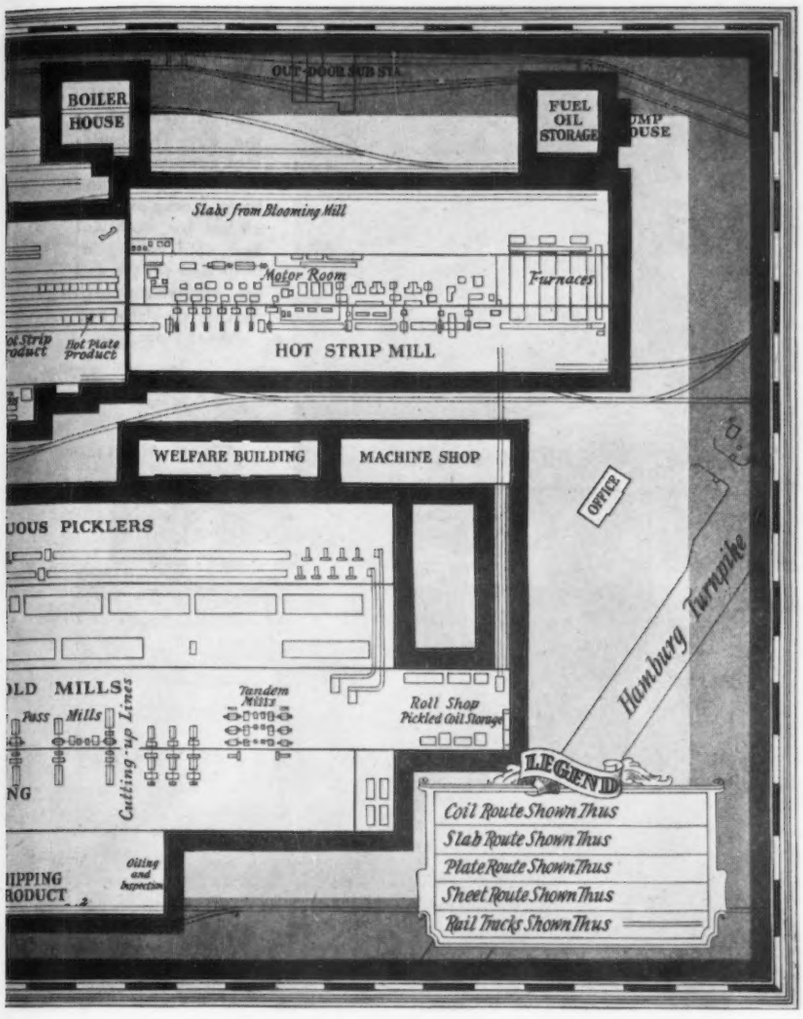
The new unit is located on a plot of 67 acres adjacent to the original Bethlehem Lackawanna plant, which will provide the slabs for the new mill. Its location also enables the use of low cost fuel in the form of waste gases from the Lackawanna blast furnaces and coke ovens. The increase in employment, this year, due to the new mill, will be approximately 2000.

The mill has an annual capacity of 600,000 tons of strip, sheet and light plate and is one of a few continuous mills capable of producing extra-wide sheets such as are required for the production of all-metal automobile tops and other recent one-piece steel products. Sheets of 60-in. width and 0.0625 thickness, or of 72-in. width and 0.078-in. thickness can be continuously hot rolled in one heating in the hot mill department. Plates will be produced up to ½-in. thickness and 72-in. width. Cold-rolled strip of 0.0125 gage and heavier will be made in widths up to 23 15/16 in. and cold-rolled sheets of 30 gage and heavier in widths of from 24 to 84 in.

The buildings, which were fabricated and constructed by the Bethlehem Steel Co., are of standard steel construction and cover an area of about 22 acres. The wall construction is principally brick and glass. All of the cold processing buildings are provided with steam heating facilities to preserve uniform temperature conditions.

In general, the new 79-in. hot strip mill is comprised of a roughing train and finishing train. The roughing train includes a two-high scale breaker, a four-high spreading stand, and three four-high universal stands with vertical rolls on the entering side. Between the scale breaker and the spreading stand there is a turntable for turning the slabs through 90 deg. when cross-rolling is desired, and a pusher for entering the slab squarely into the rolls. Between the spreader and the following stand there is a second turntable, for returning the spread slab to its original direction, and a squeezer for squaring up the edges and insuring that all slabs are the required width.

The finishing train comprises a two-high scale breaker and six stands of four-high rolls. Immediately following the last stand of the finishing train there is located a rotary flying shear for cutting material, hot, direct from the mill. At the lower end of the first transfer table there are two hot coilers, in conjunction with which is a cooling conveyor for delivering the coils to the coil storage building,



New $20,000,000 at Lackawanna

from which point they are delivered to the cold strip mill for further processing.

The new cold strip mill comprises: A three-stand four-high 75-in. tandem cold strip mill followed by a reel, a three-stand four-high 54-in. tandem cold strip mill followed by a reel; one single stand four-high 79-in. tempering mill equipped with a reel for rolling coils; one single stand four-high 93-in. tempering mill, and one single stand 75-in. tempering mill without reels for rolling short sheet lengths. In addition, there is a single stand two-high 54-in. skin pass mill, equipped with reel, for rolling coils.

All of the mills were built by the Mesta Machine Co., of West Homestead, Pa.

Slab storage comes first in the sequence of operations, a building 85 by 625 ft. and capable of storing 10,000 tons of slabs being provided for this. Slabs of the proper chemical composition and dimension are delivered, as required, to the three slab heating furnaces in the hot rolling department.

These furnaces are of the recuperative type, three zone and triple fired. Each has an effective heating length of 80 ft. and an inside width of 18 ft., with a 16-ft. 9-in. soaking hearth. Each furnace is equipped with twin tile recuperators for preheating the air to 700-800 deg. Individual furnace rating, maximum, is 55 tons per hour, or a total of 165 gross tons per hour for the three. They are fired with a mixture of blast furnace and coke oven gas with a heating value of 285 B.t.u. per cu. ft. Consumption as low as 1,550,000 B.t.u. per ton has been attained. The furnaces are also equipped to burn fuel oil if required.

Heated slabs leave the furnace at 2250 deg. F. and pass to the scale breaker situated in front of the continuous roughing stands. Emerging from this, the slab enters the four-high broadside mill which represents the first stand in the roughing train. One pass through the broadside mill is sufficient for strip sheet not over 48 in. wide. Cross-rolling takes place where greater widths are required.

Leaving the broadside mill, the slab enters a slab squeezer for evening its thickness and for edge squaring. After this, roughing is completed in stands 2, 3 and 4, all of which are equipped with vertical edging rolls. Water spraying at 1000 lb. per sq. in. pressure takes place after the scale-breaking operation and between the subsequent roughing train strands. Steam cleaning takes place also at stand No. 4.

A roller table, 95 ft. long, intervenes between the roughing and the finishing stands of the continuous hot mill. Temperature control is provided at the finishing stands so that slab heat, suitable for best results, may be obtained at the recuperative furnaces. Water and air-cooling devices are also available for cooling the slab as it approaches the finishing stands.

The slab, at a temperature of

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THE new continuous Lackawanna strip-sheet mill built by Bethlehem Steel Co., as viewed from the air. The buildings contain 22 acres of floor space and have complete facilities for both hot and cold rolling of strip and sheets and for continuous processing of strip and sheet material.

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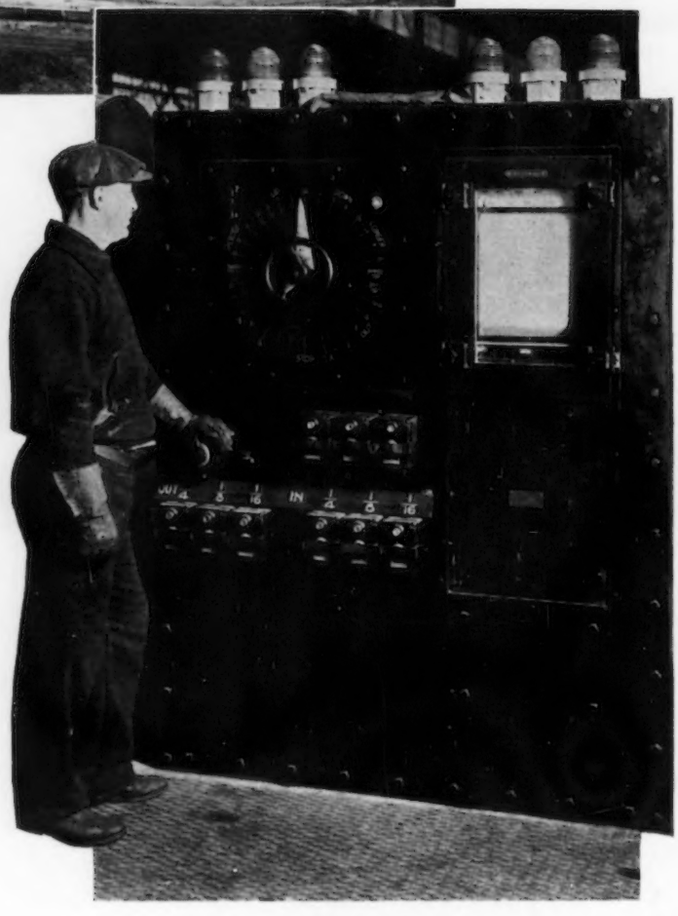

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HEAD roller's control panel in hot mill department in the new strip-sheet mill.

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1900-1950 deg., now enters a second scale-breaking stand and is subject to a water spray to remove oxide. Ends are cropped by a flying shear, after which the strip passes through six four-high finishing stands. Steam descalers take the place of high-pressure water jets in this secondary rolling process. "Loopers" are provided, controllable from the operator's pulpit, to take up any slack in the strip that may develop during its passage through the finishing stands.

In the production of hot-rolled strip, it is important to secure the desired grain structure. Therefore, to indicate and control the temperature at which the strip leaves the mill, an accurate temperature recording Ardometer has been installed. By means of this, the temperature is maintained above the upper critical, so that no cold working will take place. This eliminates the necessity of an anneal if further cold working is to ensue.

The speed of the strip as it leaves the finishing mill varies from 676 to 1352 ft. per min., depending upon width. Depending upon its use in this form or further processing, it now proceeds either to flying shears and sheet pilers or to cooling machines.

Secondary finishing processes for hot-rolled sheets and strips may include self-annealing, normalizing, roller-leveling, skin-passing, pickling, scrubbing, oiling, etc. Plate finishing includes secondary processes such as leveling, trimming and shearing into 100-ft. stock lengths. A separate line is of course provided for the final plate-finishing operations.

The Cold Mill Department

Complete facilities for taking strip sheet through various cold finishing processes have been provided in five main cold-mill buildings. Continuous pickling is, of course, the first operation in the cold finishing department. Coils are uncoiled, stitched and drawn through acid and water tanks, after which the metal is unstitched, oiled and recoiled for storage preparatory to the final cold rolling.

About 11,000 gal. of sulphuric acid solution of 8 to 12 per cent, maintained at a temperature of 180 deg. by steam coils and pyrometer control, are carried in each of the eight acid tanks on the two pickling lines.

After pickling, the coils are ready for reduction, by cold rolling, to whatever gage is required. This is accomplished on either one

of two finishing trains, consisting each of three stands of four-high mills. One of these is for coils up to 48 in. and the other for coils up to 72 in. in width. Each of these stands is driven by a 1250-hp. motor.

From the final stand the strip sheet proceeds to the coiler and may then be conveniently stored to await subsequent finishing operations. The first of these, annealing, takes the strip sheet in either sheet or coiled form. If in the former form, the coils are uncoiled, trimmed, leveled and sheared to length. If coils are to be processed they are rewound, loosely, for annealing. In either case, box annealing is the principal method used.

The annealing equipment consists of 26 furnaces capable of accommodating sheets up to 75 in. wide by 220 in. long or coils up to 59 in. wide, and four furnaces for wider sheets and coils. Annealing furnaces are of the radiant tube type.

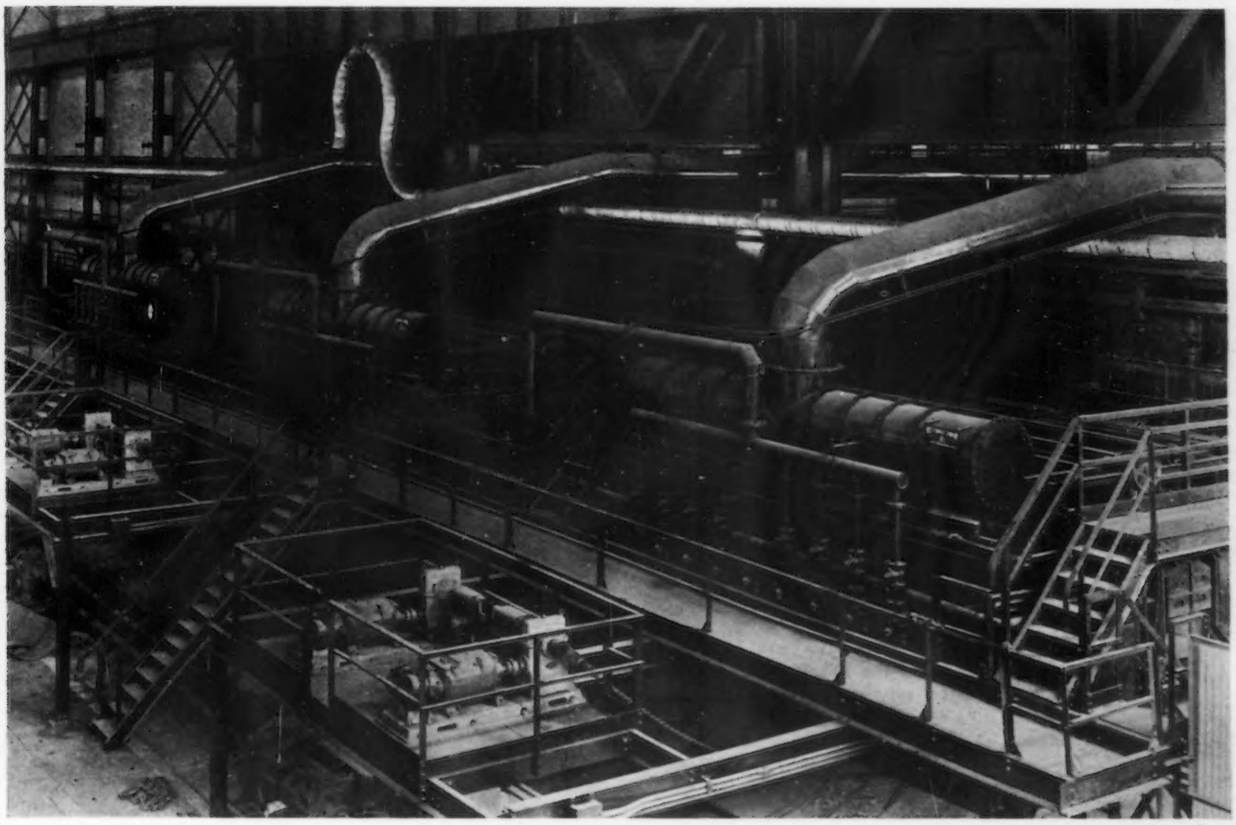
To eliminate the tendency to stretcher-strain, the sheets are next given a slight reduction of 1 to 3 per cent in tempering or skin mills.

The tempered cold-rolled sheets are delivered to the processing building for the final operations preparatory to shipping. Plain flat material is given a leveling pass. For more particular requirements it is stretcher leveled by hydraulic stretching, which gives the metal a permanent set.

Materials handling methods have been carefully studied and applied throughout the processes from start to finish. Lift trucks, gravity conveyors, overhead cranes and other appliances have been utilized to develop an efficiently coordinated system of transportation from sheet slab to finished product.

Electrical Equipment

Electric power to drive the plant is delivered from Niagara



IN these recuperative type furnaces, 165 gross tons of slabs an hour can be heated for rolling in the hot mill department. The furnaces may be fired either with a mixture of blast furnace and coke oven gas or by the use of oil.

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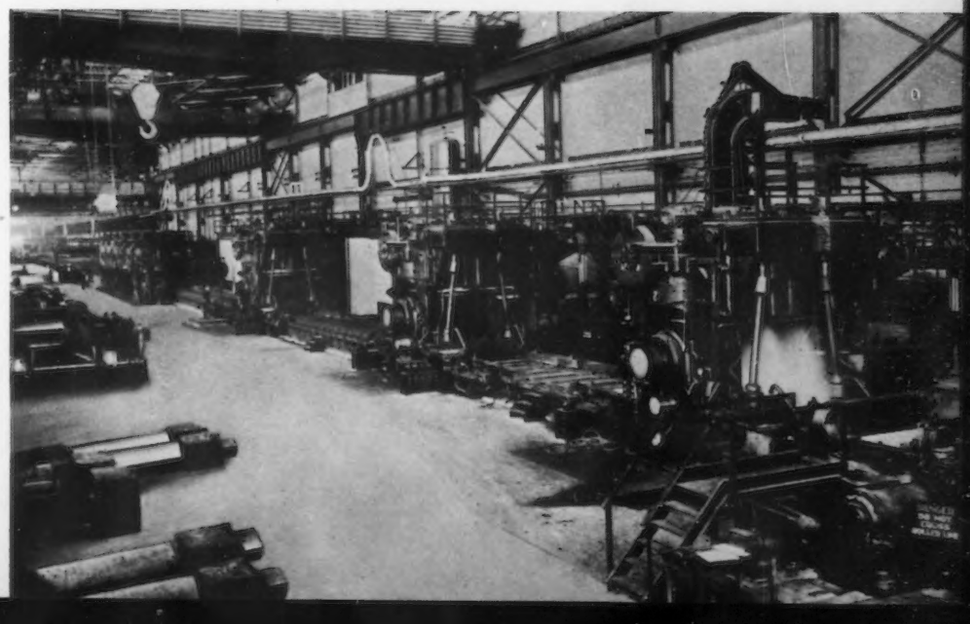
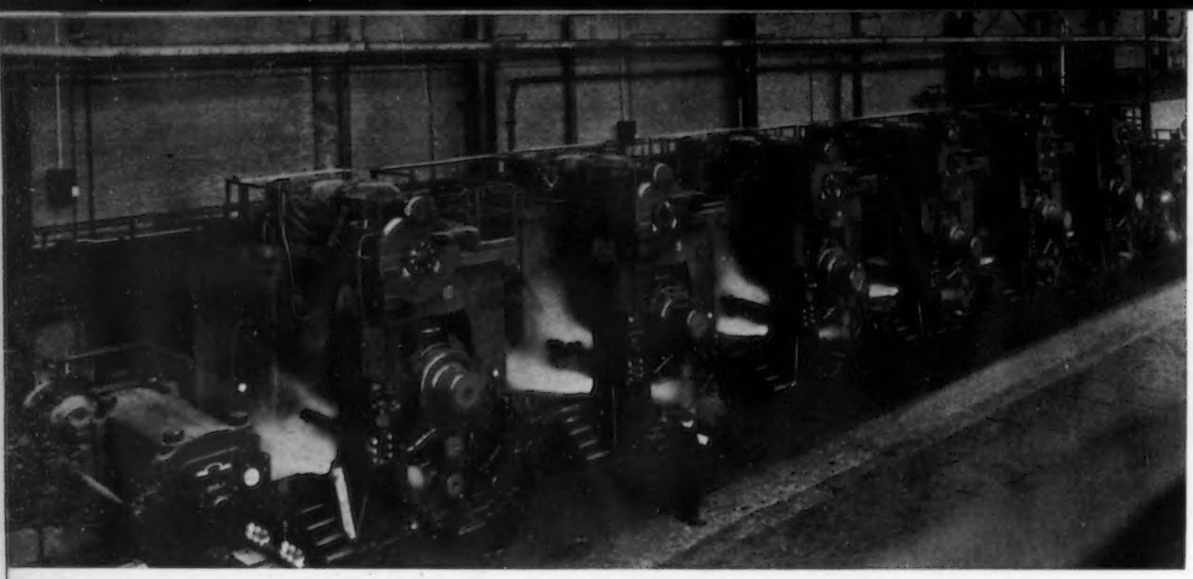
AT RIGHT

MILL stands No. 2, 3, 4 of the roughing train are shown with the finishing train of mills in the background. The roughing train reduces the thickness of the slabs from 4½ to 5 in. to between ⅝ and 1¼ in.





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SLABS which have been elongated by the roughing train of mills enter this hot finishing train at slow speed and emerge in light gage strip form, traveling up to 1350 ft. per min. The rolls on these mills are 79 in. wide and wide strip up to 72 in. is produced.

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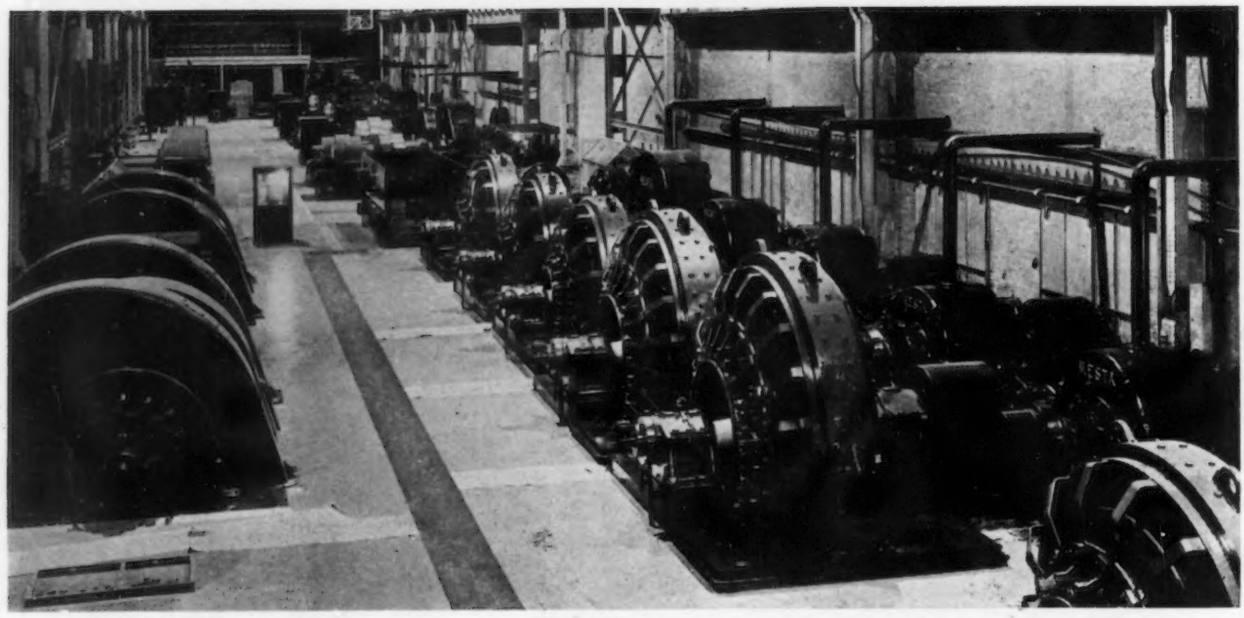
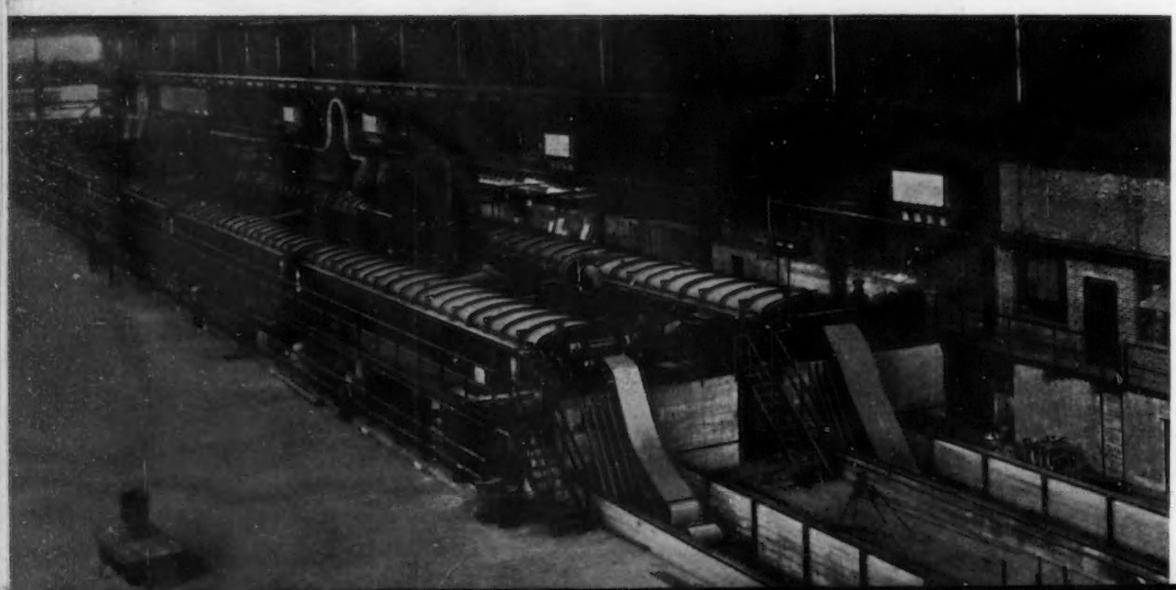


THE motors and generators for the 10 rolling mill stands are in a room located directly back of the rolling mills. Twelve large motors supply a total of 36,000 hp., and in addition 1800 small motors are used.



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THESE two continuous pickling lines are in sharp contrast with the laborious methods of pickling sheets by the conventional hand mill method. As each coil is pulled through the picklers a new coil is attached to the end of the previous coil, making the process continuous. The looping pits in the foreground provide slack for the stitching process.

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Falls at 60,000 volts, being stepped down at the mill to 6600 volts. Power is delivered to mill from substation by means of an overhead transmission system. Roughing mill drives are by alternating current motors and finishing mills by adjustable speed direct current motors. In each case the drive is through reduction gears.

In the hot mill department the first scale breaker is driven by a 1000-hp. motor and each of the four remaining roughing stands is driven by a 3000-hp. constant speed induction motor. In the finishing group the scale breaker is powered by a 500-hp. d.c. adjustable speed motor and 3500-hp. motors are applied to stands No. 5, 6 and 7. Similar motors but of 4500 hp. each drive No. 8 and 9, while No. 10 stand has a 2500-hp. motor of the same type.

In addition to these main motors there are about 900 individual motors of small size required to drive the finishing department roller tables. Altogether, in the hot mill department, there are 1350 individual motors and 24 generators, aggregating 111,000 hp.

In the cold mill, each of the nine four-high stands is driven by a 1250-hp. d.c. adjustable speed motor, operating through reduction gears. Altogether in the cold mill there are 450 motors and 11 generators with a total horsepower of 49,000.

BOX annealing building at Bethlehem's new strip-sheet plant. Removable furnace tops each serve three annealing bases. These are of the radiant-tube type providing accurate control of the heating cycle and uniformity of heat distribution. Box annealing facilities have been provided to handle material in both coil and sheet form.

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In addition to motorization, electricity plays a major part in this new plant, from start to finish, in exercising control of each operation through the latest devices produced for these purposes.

Automatic Lubrication

Automatic lubrication is a feature of both hot and cold finishing departments of the new Lackawanna plant. This phase of operations was given much study by Bethlehem engineers in collaboration with the DeLaval Separator Co. As a result there are installed seven centralized pressure lubrication systems, four of these for the hot mill and three for the cold mill. All of these systems are located in the cellar level, below the mill trains, thus leaving overhead space clear of all obstruction.

System No. 1 feeds a straight mineral oil to all meshing points and reduction gear bearings in the hot mill roughing and finishing stands. System No. 2 feeds a

(CONCLUDED ON PAGE 90)

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IN these two sets of three mills, each set in tandem, coils of strip are cold rolled at Bethlehem's new continuous strip-sheet mill. One set of mills rolls widths up to 54 in. and the other up to 72 in.

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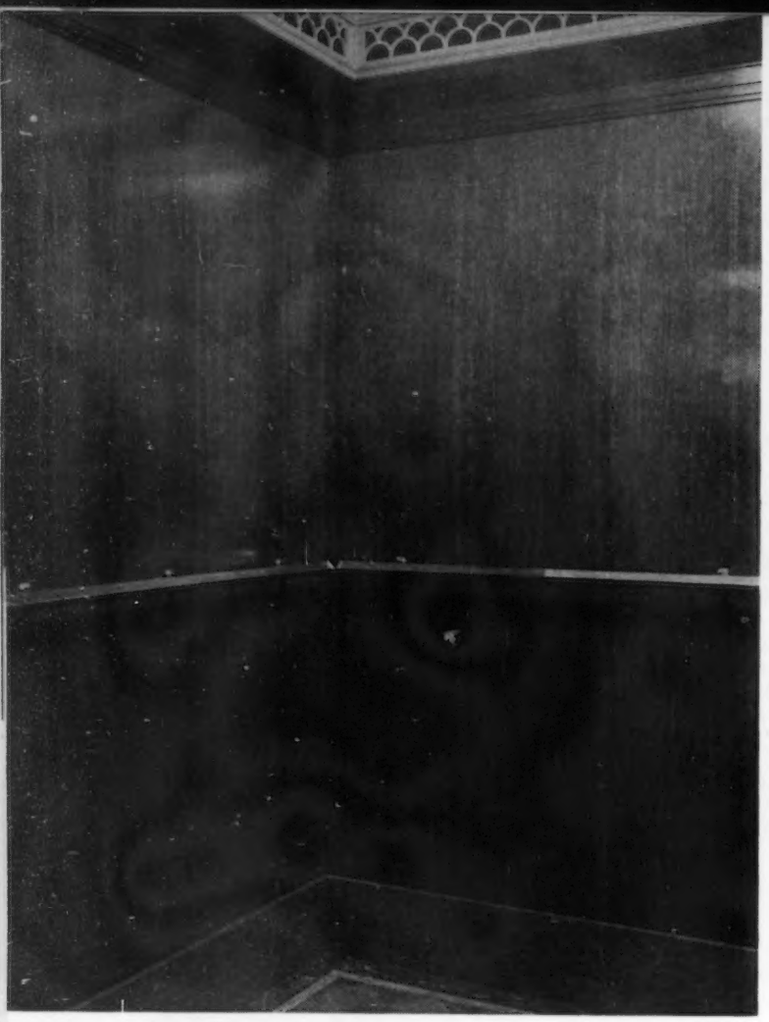

THIS elevator cab has been relined with steelwood which is sheet metal to which is glued a thin wood veneer stained and finished like any wood product.

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Wood Joins Steel in New Sheet Applications

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By ROGERS A. FISKE
Western Editor, The Iron Age

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STEEL sheets are finding new applications when glued to wood. A steel sheet may be glued to thin wood veneer to give a novel, serviceable and beautiful finish. Or, plywood may be used either as a backing for sheet steel or it may be completely enclosed by sheet metal to meet many service conditions, to give structural strength combined with light weight, and to make use of the insulating qualities of the plywood.

The Haskelite Mfg. Corp., Chicago, makes two products of this character. They are known as "Steelwood" and "Plymetl." The former has facings of thin wood veneer glued to sheet steel; the latter has facings of thin sheet steel glued to plywood. The former acts much the same as sheet steel but has the surface beauty of wood; the latter acts much the same as plywood, but has the surface durability of steel.

COMPETITION between materials is recognized as the natural outcome of a legitimate urge to gain or hold individual markets. In the past decade, steel has made considerable inroads in product applications theretofore particularly the province of wood.

In this article we have an example of departure from this competition and see how steel and wood get together, literally and figuratively, to explore new fields of service.

The facing of Steelwood is finished by ordinary processes to show the actual texture of wood—not an imitation. When tapped with the finger, it gives a subdued nonmetallic ring. In contact with the hand, it does not give the cold sensation of steel. Applications extend all the way from novelties to architectural treatment. Trays, tobacco humidors and the like fit in the novelty or premium class. Steelwood finds broad application in the manufacture of furniture, cabinets of all types and for all uses; radiator covers and the like. Architecturally it meets fire regulations for wall paneling and molding. It is not affected by changes of temperature and humidity.

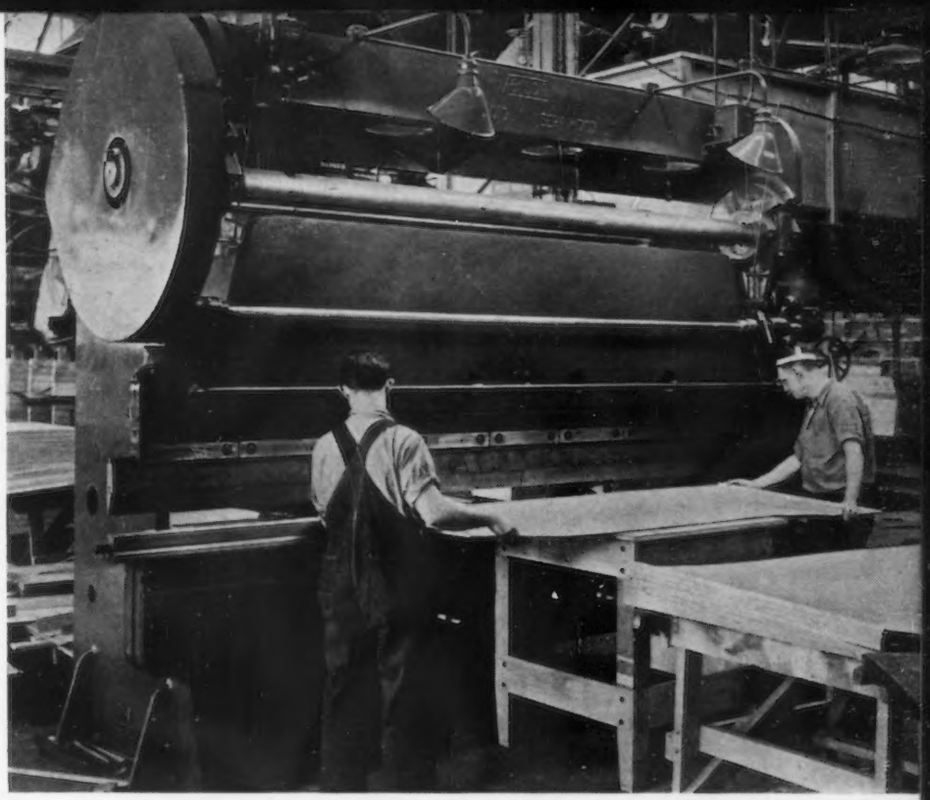
A line of occasional tables, the

first important adaptation of Steelwood to the furniture field was designed by George Pike, famous Grand Rapids furniture designer, and was exhibited at the May furniture show in Chicago.

Steelwood is adapted to forming operations which do not involve much stretching along the grain of the face veneer. Trays have been made in large numbers, the punch press blanking and forming being done in one operation. Bends can be made to radii about five times the thickness of the steel if the bending is across the grain of the veneer facing, but larger radii are required if the grain follows the curve.

Thickness of Veneer Very Small

In order that the wood facing may withstand long periods of service with little checking, the thickness of the veneer is limited to 1/85 in., about 30 gage. This small thickness has an important effect in permitting the wood to follow the steel in bending to sharp curves and in punch press operations. The requirements for the glue are severe. It must not stain through the veneer in finishing; it must be waterproof to stand soaking preliminary to forming processes; it must preserve the strong joint between steel and wood in forming. Steel surfaces must be clean and of a character that will take the glue. Bonderized and galvannealed surfaces are excellent for this purpose. The glue is set under high pressure and at moderately high temperature.



ALL mechanical operations must be performed on the sheet metal before it is glued to plywood to form Plymetl.

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Coincident with the development of gluing thin veneer to steel sheets came the necessity of fastening one piece of this steel to another in a way which would not detract from the beauty of the wood facing either by the presence of nail, screw or rivet heads or by leaving discolorations in the exposed veneer surface. The solution of this problem has been found in a refinement of the projection welding process. Electric welding is done on the exposed metal back of Steelwood in such a way that the increase in temperature of the face is very slight. The glue joint is not injured, the wood is not scorched, the surface appearance is not changed. Fastenings are made by means of concealed metal clips, angles, cover plates, or special forms.

A welder similar to those being installed at the plant of the Liquid Carbonic Corp., Chicago, is shown

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STRETCHER sheets are here electrically welded together with a resulting product which is flat and which gives a good gluing surface.

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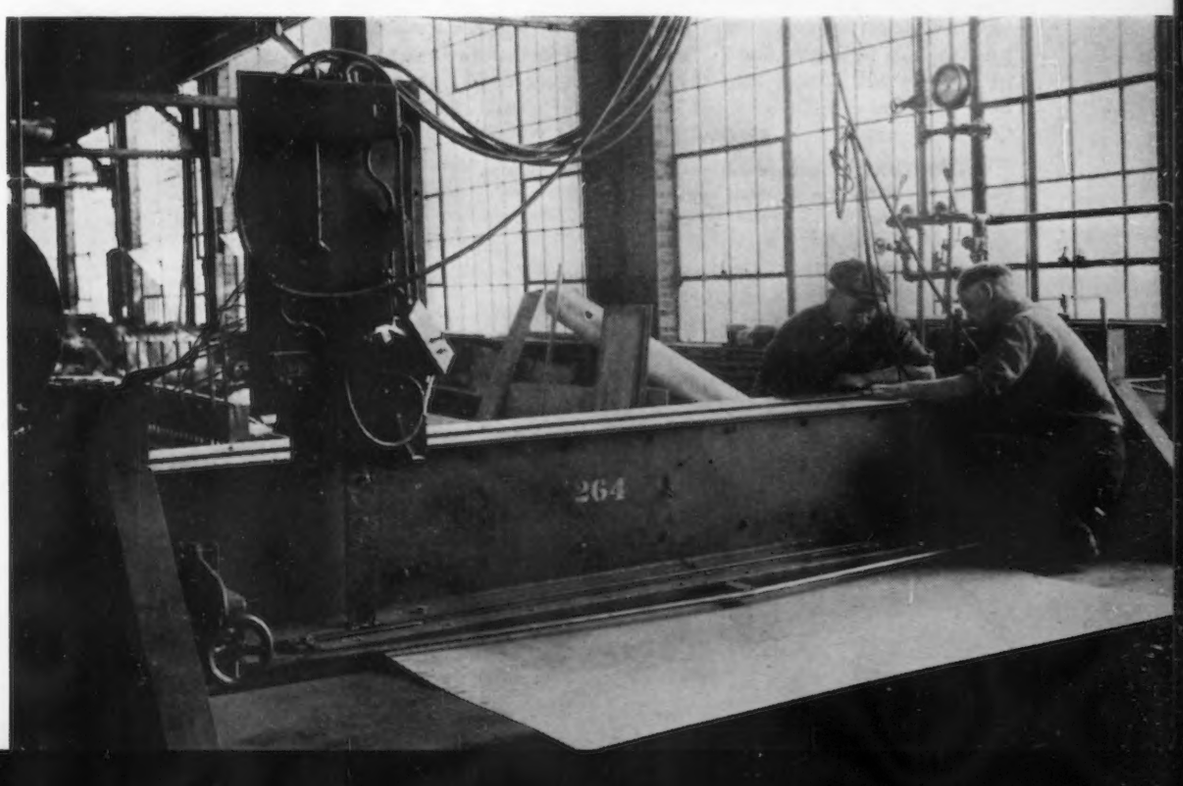
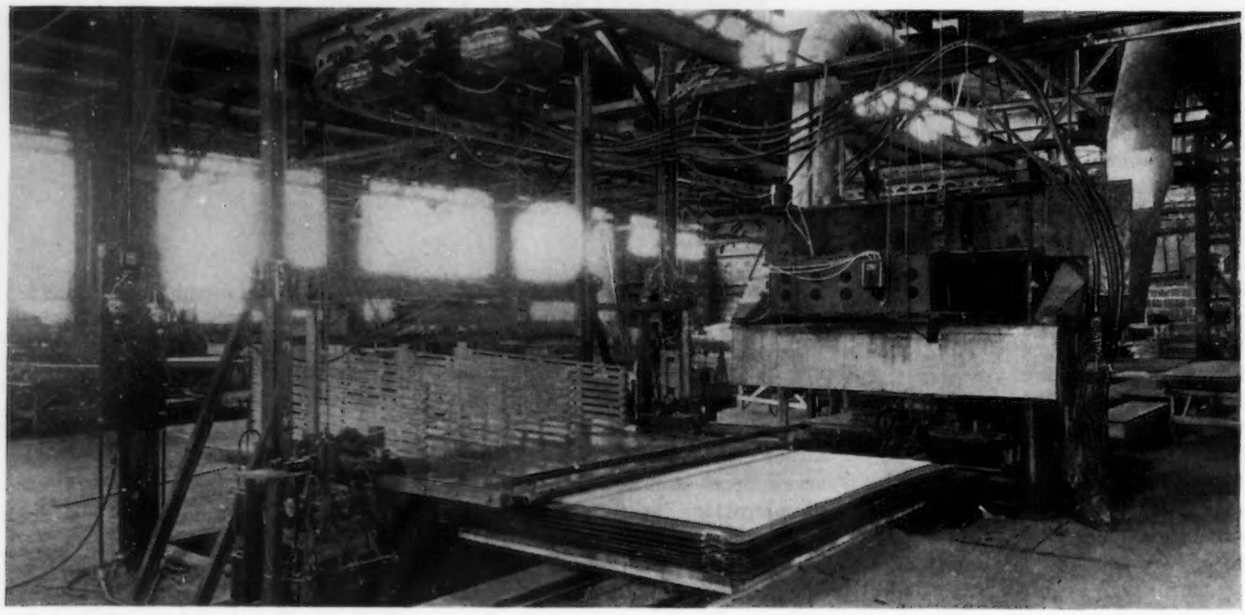


on opposite page. The welding tips are to be seen at the right, against a plywood panel background. They are mounted in a head attached to an extensible and vertically movable arm which is so counterbalanced that welds can be made at any angle and at any place within reach of the machine. Very little effort is required to move the welding head or "gun," as it is called, between its extreme positions. This Haskelite developed welding process gives much promise of finding extensive use by body builders of automobiles, busses and trucks as well as for general sheet steel work.

Plymetl has one or two sheet steel faces glued to a plywood panel. The product is much stronger and stiffer than are its component parts. To obtain some conception of this, one may note that the flexibility of a rubber eraser is greatly reduced by gluing thin cardboard to opposite faces. For illustration, a Plymetl construction 0.70 in. thick weighs 3½ lb. per sq. ft. or about 8 per cent more than 14 ga. steel; for the same stress its strength in bending is about 11 times that of 14 ga. steel and its stiffness is about 111 times that of the steel sheet. On the sides of a fancy delivery truck, Plymetl is comparatively free from the wrinkles and buckles seen in similar constructions of flat sheet metal.

Galvannealed sheet steel of a special grade is the material most commonly used, this surface favoring the adhesion of glue and paint. However, a great variety of sheet metals have been used successfully,



FLEXIBLE electric heating elements are alternated with panels. After entire load is under pressure, heat is applied by means of these electric elements.

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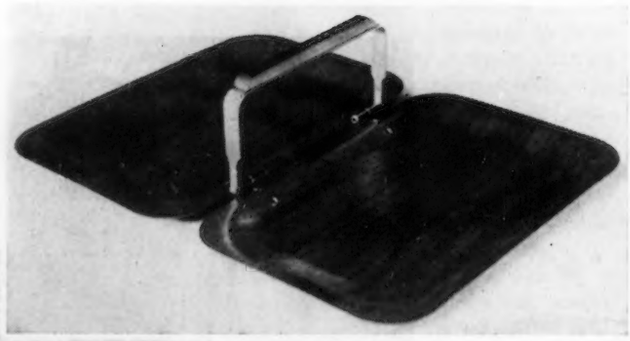
BELOW

FURNITURE of modern design lends itself readily to the use of wood veneered steel.



ABOVE

FOLDING trays are made of steel sheets to both sides of which is glued thin wood veneer. The trays are formed in a punch press after the veneer is glued to the steel.

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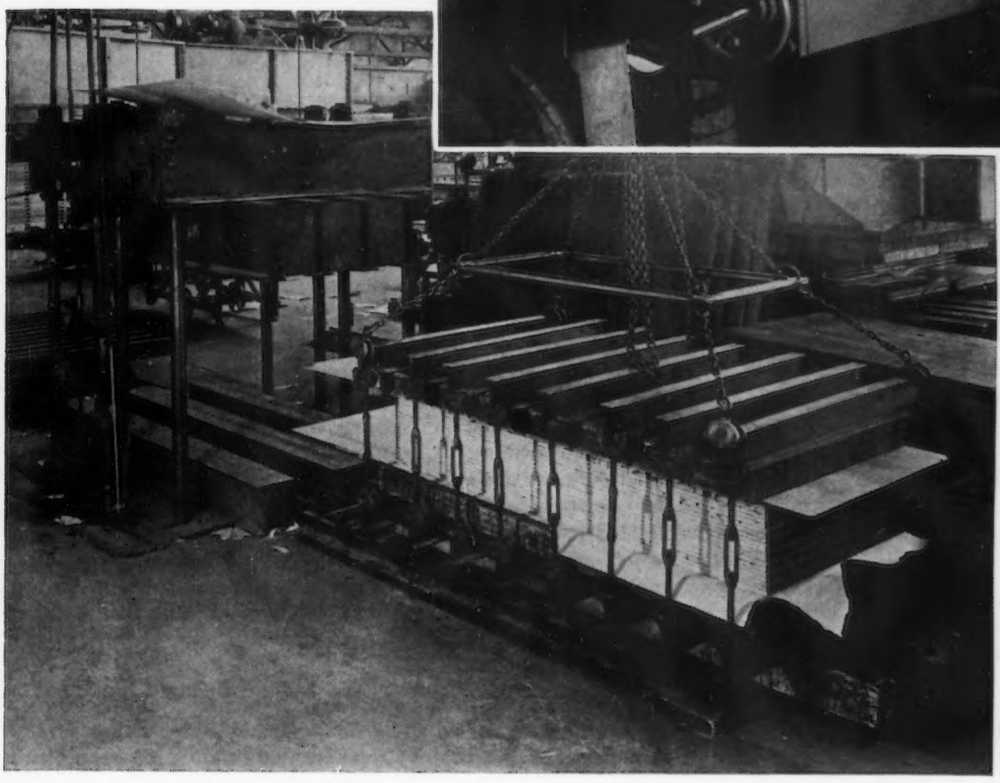
BELOW

A STACK of Plymetl being taken from a press. When under pressure the load is clamped by turn buckles. Thereby pressure is retained on the load freeing the press for the next operation.



ABOVE

THIS projection welder will fuse steel to the bare side of steelwood and leave no mark or discoloration on the 1/85-in. thick wood veneer.

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particularly stainless steel, aluminum, monel metal, and porcelain enamel. In some cases Steelwood forms one face of Plymetl. The metal faces not only contribute to the strength and stiffness of Plymetl, but they make the product resistant to moisture and to liquids. In many cases edge protection depends upon the seal furnished in setting the panels in position for use. To facilitate this protection, many varieties of edges have been developed, wherein the metal of one or both faces is folded over the edges, which may be securely closed by soldering or welding.

A special feature in this shop is an electric press in which heat is applied to panels by flexible electric heating elements designed and built by Haskelite. On opposite page is shown an element being removed from the stack of panels into a cooling rack. The panels are removed at the same time in the opposite direction and are sent to the cutoff, where they are trimmed to size.

Large plywood panels are made by scarfing together two or more smaller panels. This means that corresponding edges are accurately cut to long bevels and then glued together. Sheet steel faces of proper thickness often cannot be obtained in the sizes demanded for large panels. Therefore, it became necessary to build a welder which butt welds stretcher sheets. It works successfully on any gauge from 34 to 16; it will make a weld of any length up to 122 in.; its operation is almost entirely automatic; the welding head is followed by a milling cutter to flatten one side of the weld on sheets thicker than 30 ga. The scarfing process and this welder make possible Plymetl panels of such sizes as are limited only by transportation problems.

Another innovation is shown above. Here a stack of panels is being removed from a press. Turnbuckle clamps hold the panels under high pressure until the glue is set. Time required for setting ranges from 4 to 24 hr., depending upon the kind of glue and the kind of plywood used in the core.

It is often desired to carry an unbroken metal surface, or metal veneered surface around a corner. This is readily accomplished by cutting away part of the core or plywood, leaving the sheet metal. Specially shaped inserts are then laid against the metal and the panel is bent to form a right angle. The metal follows the contour of the inserts, which are left in place. This forms a smooth and correctly rounded corner which is rigidly backed by the inserts.

▲ ▲ ▲ The American System Sees

IN previous articles in this series the American System of Enterprise has been defined as Individualism, Initiative, Industry and Independence. It has been shown that it has set the highest standard of living the world has ever seen. It has also been shown that totally different Systems are required by resourceless and disunited Europe and resourceful and united America. From which it would seem that the American System of Freedom of Enterprise is the one for us. We do not need much more proof of that.

We are Individualists and want to order our affairs and our lives to suit ourselves, to provide for our age and to do most lasting good to our family, friends, and fellow-countrymen. We do not want to take orders from anybody, least of all from some jack-in-office, representing the R.R.E. (Regime for Regulating Everything.) We are perfectly willing to play our place on the team and to listen to what the coach and the captain tell us to do and do it with all our might—because we want to do it.

That is what the American System of Free Enterprise has always been—a few hundred farmers leaving their hoes and harrows in the fields, to stand in a row on Lexington common against the British grenadiers—a Nation waging a fratricidal conflict over the enslavement of human beings—our own generation engulfed in the War of All Nations to put an end to military despotism.

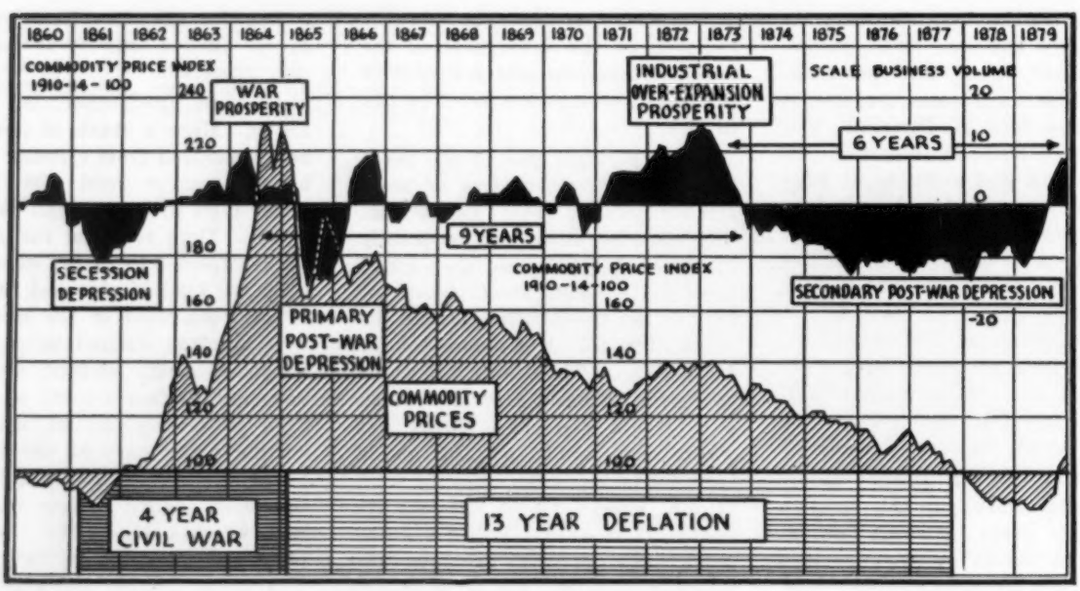
We have always been ready to fight for the right to do as we please. May we ever remain so.

Now many people are asking what happened to our system just prior to the six-year horror of this depression. Was the system, itself, a cause of the depression? Was it temporarily broken down by the irresistible surge of destructive forces new to it? Or had it fallen completely into obsolescence, to make way for a newer and better system?

It is quite natural that these questions should arise in the popular mind, unaccustomed to analyze causes and only too ready to blame hard times on whatever is handiest—big business, the bankers or the Government. This time they tried blaming the depression on each of these in succession, then on all of them together and finally, when that did not seem to be the answer, upon the American System in its entirety.

The System Became the Goat

So it has come about that a very considerable number of people are



HERE is what happened to Business Volume (black) and Wholesale Commodity Prices (diagonal hatching) during and after the Civil War. Prices shoot up to a peak and take 13 years to decline. Meanwhile the short depression right after the war is nothing to the long one which followed it after nearly nine years. From a chart copyrighted by the Century Press, Toledo, Ohio.

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s It Through ▲ ▲ ▲

By MORGAN FARRELL
Director
Chilton Bureau of Economic Research

of the opinion that our system has been a direct cause of the depression. Their reasons may be vague but they add up to this: That the money lent to the Allies dragged us into the war to protect our loans; that the money later lent so recklessly to bankrupt Nations and foreign corporations came out of everybody's pocket never to return; that the money invested by their thrifty selves in securities of all kinds, notably real estate, was shamefully squandered. They put it all into terms of money misused.

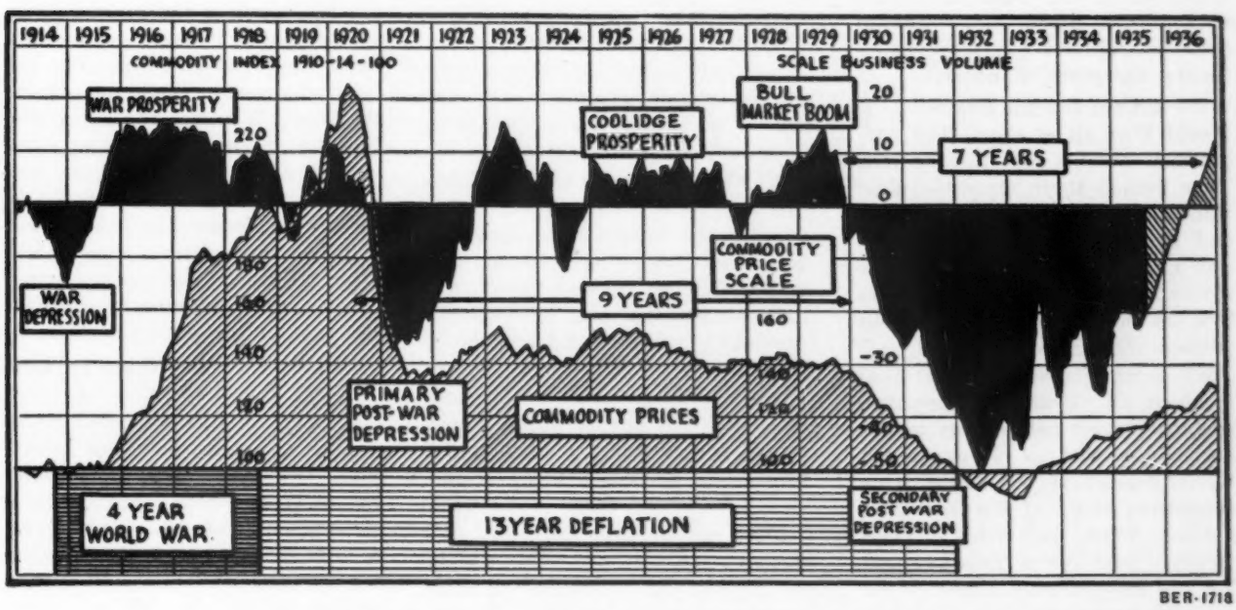
Then there is a second great number of our people, possibly more thoughtful than the masses just mentioned, who hold the American System not directly but indirectly responsible for the catastrophe. They say that the immediate cause was the collapse of the insanely inflated stock market, the keystone of the American System, which did nothing to avert the disaster—in fact aggravated it by lending immense sums of money for stock gambling. That after the crash, this and all other credit immediately contracted to the vanishing point carrying all business done on credit, with it. They contend further that the former, normal amount of credit to business has not been restored and that, until it is, recovery will continue to be limited in direct ratio to the volume of credit available.

Then there is a third class of intelligent people, who do not hold the American System directly or indirectly responsible for the depression but who do hold that the system failed to avert the calamity and hence must have something the matter with it, which needs reforming.

The arguments of all three classes and they have included, until recently, well over half the public opinion of the United States, all amount to about the same thing:

THIS is the fifth article in Mr. Farrell's series on the American System of Enterprise. In this installment, he shows that this depression, like the great post Civil War depression, was the result of the profligate expenditure of money, materials and manpower in the World War.

Having defined and described the American System in this and the foregoing articles, the author will devote subsequent chapters in following issues to the enemies of the American System.



AND here is what happened after the World War. The cycle is identical with that after the Civil War but the business volume swings are more violent because the business of the whole world was throwing its inertia into the moves. From a chart copyrighted by the Century Press, Toledo, Ohio.

That we have suffered an intense and preventable depression caused by or, at least, not arrested by, our system of ordering our National lives.

Confusion of Cause and Effect

It seems to us that this is a confusion of the order of causes and effects in a chain of events not limited to America alone but affecting the lives of all humanity. What is happening in our country is the breaking out upon the surface of a profound illness of man's scheme of civilization upon Earth.

There was a four years' war, involving all the Nations of the globe. It had not only arrested the normal, constructive activities of the whole Earth for that length of time but had released destructive forces which could not be stopped even by the loss of millions of lives and billions of treasure but must go on until the healing power of time could do its work.

If there had never been an orgy of stock market gambling by everybody who could scrape together enough to buy stocks about which they knew nothing, the depression would have come just the same. The war had cost us $26 billions; we had lost some $16 billions more in foreign repudiated obligations, public and private. On top of that, our foreign trade dropped from $3 billions excess of exports over imports to $0.2 billions *per year*. How could that stupendous sum be taken out of our National wealth without a complete dislocation of business, without every one of us feeling the pinch of poverty.

We did not feel the effects of the World War all at once. The vanquished nations of Europe did. They joined their erstwhile Russian and Italian foes in revolution and anarchy. Spain in the West and China in the East went into revolution. India and Egypt trembled on the verge. The victorious powers were almost as badly off. They escaped revolution but that is about all. Broke and demoralized, they could neither pay us nor do business with us. How could it be otherwise? If our losses were staggering those of the European nations were paralyzing. Their money losses were fatal enough but the irreplaceable losses in human life and usefulness were even greater. Then there were the destruction of one-sixth the area of France and the other wartorn regions in Eastern and Southeastern Europe; the sinking of 13 million tons of commercial vessels and 1.3 million tons of warships; the outbreak of revolution in seven countries.

All that life, wealth and order are to be taken out of the world, while in American business is as usual! It could not be; the law of compensation does not work that way.

Depression was Result of War

Therefore, while people tend to blame our depression on this or that link in the chain of cause and effect, the more thoughtful economists agree that it was caused by war losses, which, in turn, caused a disruption of the entire structure of international trade and finally of our own internal trade. We were not organized to do business only among ourselves and in the process of slowing down the industrial and business machine to make the necessary readjustments, too much way was lost and a real panic ensued.

The rest of the world had been going through these throes twelve years before they reached us. We thought that we were going to escape them; that, for some strange reason, whatever went up would not come down. To make matters worse eventually, we embarked on an easy money spree of overbuilding, overbuying and overspeculating. Not only was credit unlimited but financing by the sale of shares to the public reached the highest point ever known. Something like $7 billion worth of real estate stocks, mortgage bonds and guaranteed certificates alone were held by nearly six million people.

Finally the period of lag ended and we were struck by the full fury of the financial storm which had been sweeping around the world. The fact that we were bowling along under the full sail of prosperity spending did not cause the disaster—it only made it that much worse. So it came to pass that, when the gale subsided, stripped of her canvas and under bare poles, our economic vessel came almost to a dead stop.

That, we believe, faithfully describes what happened. The American System had nothing to do with bringing on the depression. It was functioning perfectly before the war, continued to function with amazing flexibility under the rapidly expanding demands of the conflict and resumed peaceful operations in the post-war backwash as efficiently as ever.

It is apparent, then, that our system of doing things was not the cause, either directly or indirectly, of the depression. But the question still remains: "Could or should it have prevented the depression?"

This is very much like asking: "Could it have prevented the World War?"

Presumably it could have done that, too—by cutting off the supplies. So could the Civil War have been prevented by letting the seceding States go. But neither of these methods would have been in accord with the most elementary principles of the American System. In the first instance the united thought of America, which is the life of the system, approved the destruction of militarism and in the second, it insisted upon the preservation of the Union as well as the termination of slavery.

An Astonishing Similarity

There is an astonishing similarity in the reactions of our system to the violent disruption of all its peaceful workings by those two great conflicts. The parallel is so close that we may safely rest our case for the continuing vitality of the American System of Enterprise upon it.

We have seen that our way was not the cause of the great depression and that it could not consistently have prevented it. The belated depression was the effect; the World War was the cause. The fact that the worst depression came so long after the close of the conflict puzzles many of us, especially those who forget that there was quite a depression immediately after the war. Nine years elapsed between the beginning of the first and that of the second depression.

Exactly the same thing happened after the Civil War. In fact the American System, after being strained to the breaking point, went through exactly the same phases of alternate depression and recovery at that time which we have recognized up to the present. Let us compare them and follow through to see what we can learn from the final post-Civil War recovery, which might give us some

(CONCLUDED ON PAGE 90)

B. F. FAIRLESS, President, Carnegie-Illinois Steel Corp. Drawn by John Frew for The Iron Age.

ABOVE

FIG. 1—The new "Universal" pull-type machine is adaptable to both internal and surface broaching. This series comes in six models up to 20 tons in capacity and in 48 and 60-in. strokes.

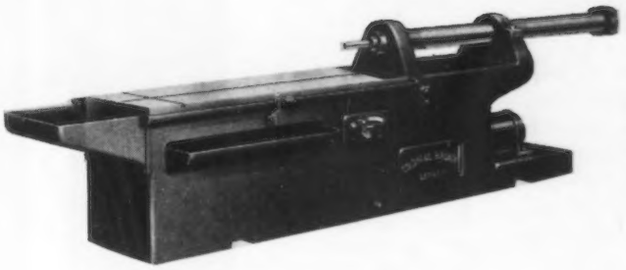


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FIG. 2—This "High Speed Pusher" is suited for continuous surface broaching of small parts.

Colonial Introduces New Line of Broaching Machines

IN recognizing the part that broaching is playing in present-day machine shop practice, the Colonial Broach Co., Detroit, has recently expanded its line of such equipment to include practically all types. In the new set-up are eleven basic types in 49 models, including the well-known and widely used surface broaching machines of the single and dual-ram types, as well as the Colonial "Utility" broach machine, all of which have been improved in details and extended in range.

Several new types have been added. They include a group of horizontal universal broaching machines of heavy-duty and high-speed varieties; two new series of vertical machines, one for job-lot work, the other for high production; two types of presses, and two models of broach sharpening machines. Aside from these standard models the company is also furnishing special-purpose types as required, particularly for the automotive industry.

The entire line of Colonial machines is featured by welded steel construction in combination with cast iron. Individual motor drive characterizes all units, and all models have extra large coolant tanks and pumps. Simplicity in design, as well as in construction, has been a major objective, and special attention has been given to ease of cleaning. The design of all machines is such that chips will not accumulate around the work or tool, but will drop down into large containers, which are easily removable.

Machines Placed on Unit Basis

Another general design objective has been to produce standard machines at popular prices that are made up on a unit basis. Special-purpose machines having inherently little salvage value, have been avoided. It is readily possible with the present line to convert from one size or type to another. It is also possible to make a continuous line production unit out of a group of standard machines by mounting them on the same base. Thus, single and dual-ram machines may be combined, and there are no obstructions to prevent the use of continuous feed fixtures between such machines, either on a continuous base or mounted individually.

Where rolled steel construction is employed, fabrication in all cases is by electric welding, generally in three sections. Base, column and table. Ways in all types are made of hardened and ground steel, rams are made of

semi-steel and are of exceptionally rigid construction. All machines are operated through hydraulic pumps, arranged for high cutting speeds and fast returns. On all heavy-duty machines variable-speed controls are standard equipment. In most machines automatic lubrication is provided, and in all such types control of the lubricant flow is such as to impart a shot to the ways every cycle of the machine.

Horizontal Universal Machines

Series HA 1, shown in Fig. 1, comprises a new group of six horizontal universal broaching machines. They range in capacity from 10 to 20 tons and are available in both 48 and 60-in. strokes. Standard cutting speed on this machine is 30 ft. per min., with the hand lever being provided with a variable-speed control to reduce cutting speed below that feed when desired. The return stroke is at the standard rate of 60 ft. per min. These machines take broaching tools up to 10 in. in width.

This group of machines is particularly adapted to the broaching of keyways, and round and splined holes. Face plate capacity is provided so that the machine can also accommodate a wide range of surface broaching fixtures. Rugged follow rests can be supplied to facilitate handling of extra large broaches.

Operation is through a 1000-lb. pressure hydraulic pump, operated through a direct-coupled motor. Operation of the ram is through a 4-way valve located at the hand lever control. Coolant supply is automatically started and shut off when the machine is started or stopped. The line is particularly noted for its simplicity of design and ease of chip cleaning, as may be noted from the illustration.

Pusher Series

The series HB 1 "Pusher" machine, Fig. 2, is a 6-ton horizontal high-speed broaching machine of the push type. Stroke is 36 in. It is specially designed for the provision or addition of magazine feed hoppers, making the machine a fully automatic type. Thus, it is ideally suited for continuous surface broaching of small parts such as washing machine, typewriter and automobile components, with a minimum of attention on the part of the operator.

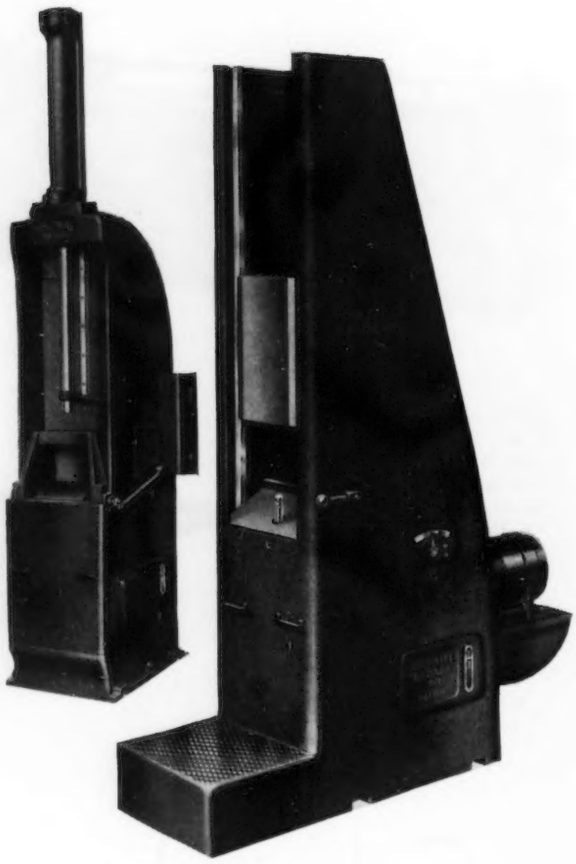


FIG. 3—In the new "Pullup" line is included the model at right for high-speed production where fairly light cuts are taken. This machine comes in a 36-in. stroke and capacities from 6 to 15 tons.

o o o

AT RIGHT

FIG. 4—The heavy-duty vertical "Pull-up" is available in 10, 15 and 20-ton capacities with strokes of 48 and 60 in.

Designed for short runs where ability for rapid change-over is essential, the high-speed vertical "Pullup" series, VC 1, Fig. 3, has been introduced in three basic types, ranging from 6 to 15 tons in capacity. Standard stroke is 36 in. This line is particularly adaptable for internal broaching with fairly light cuts such as on bushings and internal gears, where a high production rate is demanded. They may be used either as single or twin-broach machines.

The ram is of the pull type, the machine being equipped with a lower cylinder to handle the broach. Broaching is entirely automatic with this construction, and no handling of the tools by the operator is required. These machines are designed for a constant speed of 30 ft. per min. while broaching, and 60 ft. per min. on the return stroke. Drive of the 1000-lb. pressure hydraulic unit is by V-belts from an 1800-r.p.m. electric motor mounted in the base of the machine. Feature of the machine is that coolant supply is provided for both above and below the work, the coolant supply itself being controlled by the starting handle—stopping when the machine is stopped.

Similar to the VC series, the heavy-duty vertical "Pullup" VG 1 line is shown in Fig. 4. This line is available in five sizes in capacities of from 10 to 20 tons and in both 48 and 60-in. strokes. The VG line is designed particularly for heavy-duty vertical pull broaching, such as is required on large gears, or on roughing large holes of any kind. In general design and arrangement these models closely follow the VC series with the exception, of course, that construction is more rigid throughout. They are also adaptable to a wider range of broaching requirements than the light-duty types, since variable speed is provided.

Broaching Presses

Also included in the new Colonial line, just announced, are two groups of broaching presses. One series available in a full range of strokes and in 10 to 60-ton capacity is the power press series VK 1, Fig. 5. These are two-column presses, noted for their sim-

plicity of operation and rigidness of construction. The type of column construction lends itself to any reasonable stroke length. This series can be used for large ring gears and for all large surface work. Tools can be worked up to 2 ft. in width.

Light-duty presses, series VF 1, Fig. 6, are also available in 18-in. strokes and with capacities of 1, 2 and 4 tons. All models of this line are hydraulic power operated, as well as their heavier prototypes. They are particularly suited for small shaving or surface broaching work, for cutting small keyways, pressing in bushings and the like.

Surface Broaching Units

Included also in the Colonial broaching machine line are the latest models of the now well-known and widely used surface broaching machines of the single and dual-ram type, Fig. 7, as well as the Colonial utility broach machine, Fig. 8. Each of these, of the single and dual-ram types, known as the VA 1 and VA 2, are available in eleven models, ranging from 6 to 25 tons. The stroke range has been increased to include 60 in., as well as 36 and 48 in. The utility type is now produced in seven sizes, from 7 to 15-ton capacity. Tools up to 13½ in. width can be applied in the heavier types. All pumps are now mounted in the base. Receding tables are standard equipment, where they were optional before.

Broach Sharpening Equipment

Accompanying the new line of broaching machinery are two new models of broach sharpening machines, the model SFA-36, Fig. 9, designed for surface broaches and the model SRA-72, Fig. 10, designed for cylindrical broaches. These sharpening machines are noted for their simplicity and compactness. The spindles are direct-driven and the broach driving headstock is driven separately through a 2-speed gearbox. No belts or pulleys are employed. Special attention has been given to protect the machines against grinding dust.

Earlier models have demonstrated the need for such equipment, as indicated by a two-thirds reduction in time required to sharpen broaches, as compared with equipment in general use. These machines also overcome the difficulties inherent in grinding the undercut associated with large grinding machines commonly used for broach sharpening.

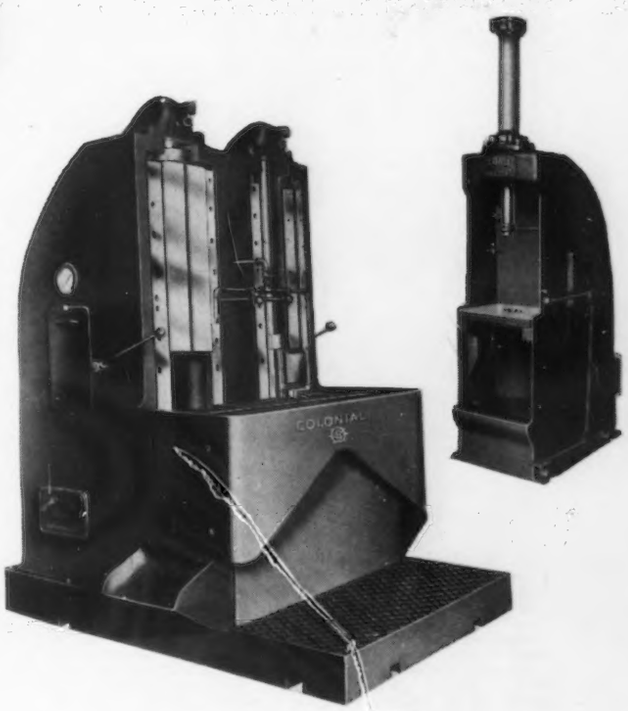
FIG. 6—These "Light-Duty" presses come in three models of 1, 2, and 4 tons respectively. Eighteen inch stroke is standard.

AT LEFT

FIG. 5—A complete line of "Power Presses" is available in the company's line. The machines are available in a full range of tonnages and strokes.

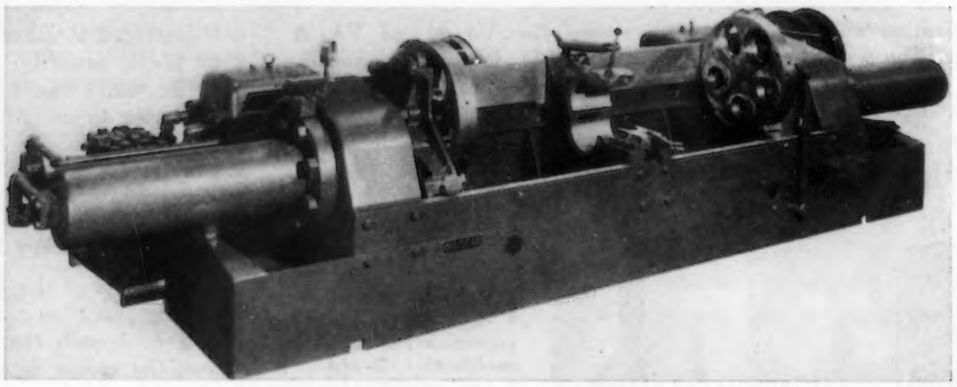
AT RIGHT

FIG. 7—The "Dual Ram" surface broaching machine now carries receding tables as standard equipment. Available in 11 sizes and strokes of 36, 48 and 60 in.

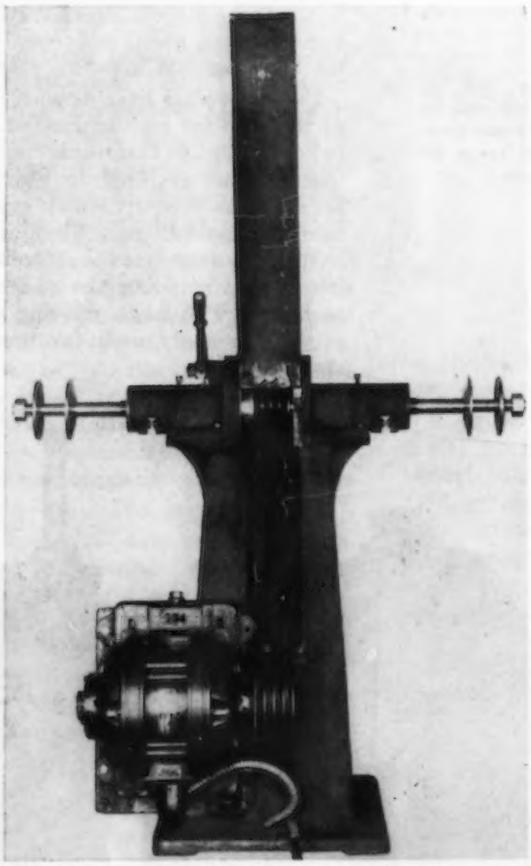


ABOVE

FIG. 8—The "Utility" broach is now available in seven sizes ranging from 6 to 15 tons in capacity.

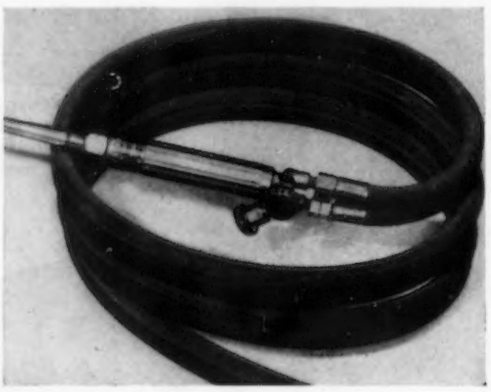


EACH end of steel truck housing tubes is simultaneously cold swaged from 6 in. to 4 in. diameter in five passes on a new 100-ton horizontal press by The Oilgear Co., 1403 West Bruce Street, Milwaukee. The tube is manually clamped in a center stationary fixture. Dies in two opposing five station rotary supports are moved forward by crossheads for the swaging operation. The die supports are indexed individually and manually, the lower die position being on the centerline of the cylinder ram for swaging. A single lever at the machine front controls both speed and direction of crossheads movements. The base is of welded steel construction. Stroke, each piston, 40 in.; distance between die blocks, 96 in.; maximum pushing speed, 135 in. per min.; maximum return speed, 300 in. per per min.; weight, press and pumps, 32,000 lbs.



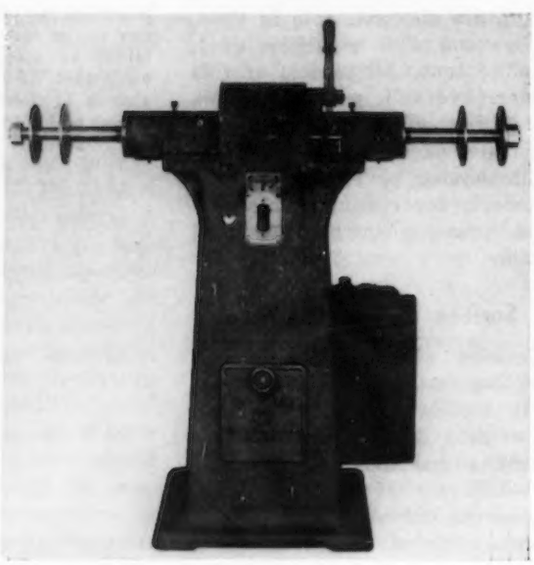
ABOVE AND AT RIGHT

THE Standard Electrical Tool Co., Cincinnati, has added selective speed buffing and polishing machines to its line of buffing and polishing lathes. A hand lever brake application is shown at right, and power transmission by four V-cog belts above. An elevating screw permits motor adjustment for belt tension. A hinged guard (shown in part) covers sheaves and belts. Oversize ball bearings are mounted in labyrinth sealed chambers. The spindle may be removed for belt change without disturbing mountings. Push button control at the front operates a magnetic starter within the pedestal.



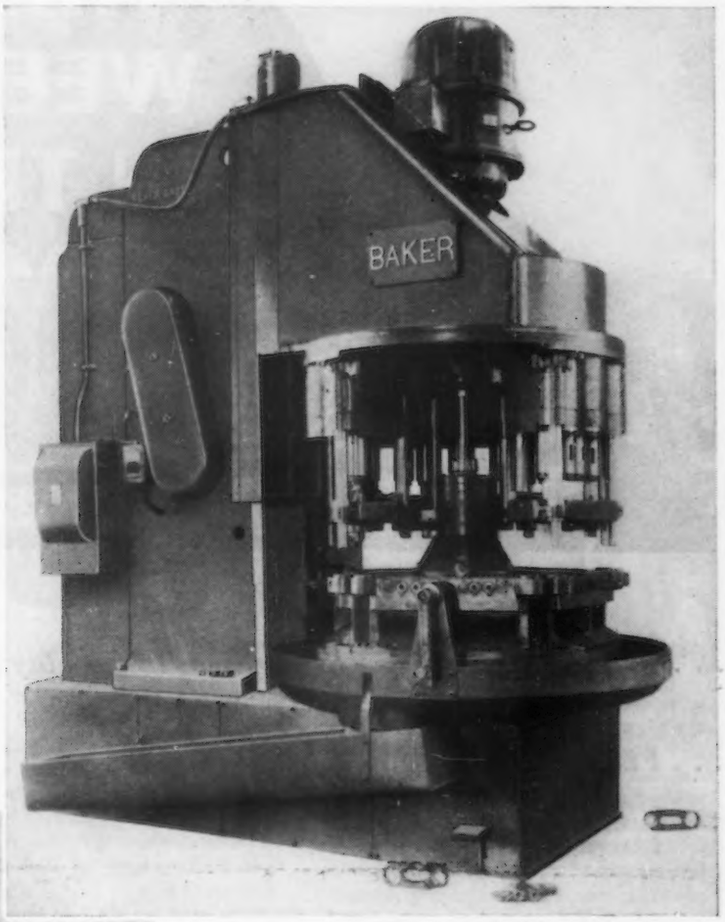
ABOVE

A NEW type Duplex rubber tubing, or hose, for welding and similar service, is being marketed by the Electric Hose & Rubber Co., Wilmington, Del., under the trade name "Supero Siameez." Construction consists of a twin hose simultaneously molded, with a connecting web between. A special cord-wound reinforcement is incorporated between the first and second braid. The connecting web can be cut down with a carborundum wheel in preparation for attachment to separate outlets.



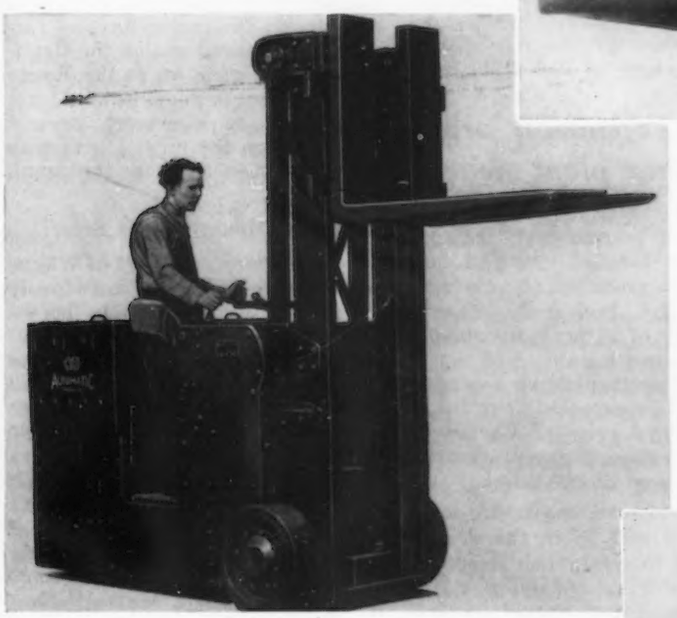
ABOVE

ADVANTAGES obtainable through having a fluid strainer at the inlet of a spray gun are provided by an attachment announced by the DeVilbiss Co., Toledo, Ohio, for use with certain types of that company's equipments. Working assembly of device consists of a screen, reinforced with a coil spring and inclosed in a metal tube. Flow is from the outside to the inside of the screen which is easily removable. The attachment is said to prevent any residue in a fluid line from reaching the gun proper.



ABOVE

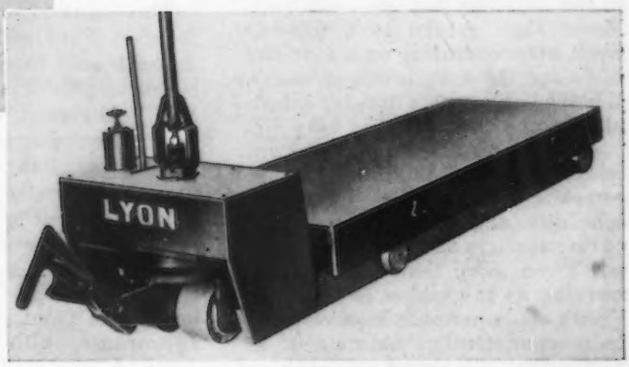
A NEW five-station production machine by Baker Bros., Inc., Toledo, Ohio, completes one right and one left tractor link in each work cycle. Two holes in each work piece are core drilled and reamed; a large hole is rough and finish counterbored. The machine features fast operation based upon double feed and delayed reverse; a course boring feed with automatic change to fine feed for facing; a positive stop allowing several revolutions before tripping, which assures a squared surface; and a simplified oil gear pump rapid traverse feed.



ABOVE

A HEAVY duty center control tiering fork truck of 10,000 lbs. capacity, is announced by Automatic Transportation Co., 101 West Eighty-Seventh Street, Chicago. Load length is up to 72 in. Operation in 94-in. intersecting aisles is without interruption. Front wheel drive is employed. Carrying and stacking design aims at greatest stock movement with fewest possible trips.

o o o



ABOVE

A SPECIAL 15-ton hydraulic lift truck, recently built by Lyon Iron Works, Greene, N. Y., is utilized in an automobile parts stamping plant for the transportation of dies to and from large presses. A handle for pulling and a tow-hitch for towing are both provided. Power for frame elevation is by a hand hydraulic pump. Elevation is 3¾ in. from a lowered height of 9¼ in. The platform is 30 in. wide by 84 in. long. There are four wide faced rear wheels and two front wheels. Fifth-wheel steer is employed; all wheels are ball bearing. Main and elevating frames are of structural shapes, electric arc welded.

THIS WEEK ON THE ASSEMBLY LINE

. . . Production rises as Ford returns to five-day week.

o o o

. . . Fisher Body closes on first-run 1937 model body sheets in order to take advantage of second quarter prices.

o o o

. . . Buick engages in $1,500,000 expansion program as General Motors stamping plant nears completion at Grand Rapids.

DETROIT, June 30.—As a result of the sudden spurt in retail sales, automotive production increased almost 4500 units last week. This represents the fourth consecutive week this June in which production has been over 100,000 units. The principal factor in the situation has been the Ford Motor Co.'s return to a five-day week, after operating on a four-day basis for the four previous weeks. Whether or not this five-day schedule is to be maintained is very difficult to ascertain, since the Ford company is maintaining rather complete secrecy about its future schedules and even the principal parts suppliers and body plants are not given more than a few days' warning as to changes in schedule. Ford's daily output, however, has been consistently maintained at 4500 units. Chevrolet's production is nearly 1000 units more a day.

Relatively speaking, Ford has lost ground in the first five months this year, whereas Chevrolet has showed a large gain. Taking registration figures for the first four months in 42 states for May as reported by R. L. Polk & Co., Ford showed a drop of 17 per cent while Chevrolet showed a gain of 80 per cent over the corresponding period last year. It is expected that the first six months' sales of Chevrolet will have exceeded any previous record by at least 80,000 units.

This leads to some conjecture as to what Ford will do in the next model season to reestablish its position as No. 1 contender in the field. Chevrolet will bring out a completely new car with all new mechanical details, including engine, transmission and rear axle of the hypoid gear type. Ford changes will largely be confined to body lines, which are said to closely conform to the present Lincoln Zephyr both as to front end and rear end appearance, although the structural details will be vastly different.

The fact that Ford is pushing jobbing shops on dies at the present time indicates that perhaps an announcement before the November shows will be in order. Rumors also continue to the effect that Ford may introduce a small engine in the present chassis to seek principally a waiting market in the rural districts, where economy of operation would be a major factor in the sales argument. With production of a small V-8 engine to supplement the motor lines of factories in England and on the Continent having gone on at the Rouge plant for over a year, it would not be difficult to reconvert present equipment on the large job to take care of production on the small one.

Bonus Money Boosts Sales

Sales of passenger cars in Wayne County have jumped tremendously since the issuance of bonus bonds. Where an average week was running around 3000 units, sales up to 800 cars a day were being reported last week. Used car sales are not maintaining the same relative pace, however, and dealer stocks are mounting in this district. This would indicate that the better part of the buying is on the part of those who benefited indirectly through the turnover of this huge cash disbursement, rather than spending on the part of veterans themselves. It should not be surprising, therefore, to see another pick-up in production during the current week, even though the July 4 holiday will interfere with retail sales.

Chrysler plans 90,000 units for July and 40,000 for August. The Plymouth motor line has been averaging 11,000 units a week during June, but July's schedule will run up to 12,000 in order to build up a bank of motors when the machine shop goes down during the change-over period. The assembly line will continue to operate. Dodge's daily production of 1300 units has been

practically unchanged for months, and because of banks of orders ahead, postponement of the seasonal shut-down period has been made three times.

General Motors units are maintaining their pace and will probably continue to do so for the next month. A possible exception is Buick, which has traditionally been the first of the General Motors units to shut down for change-over and the first to lead off with an announcement of a new model.

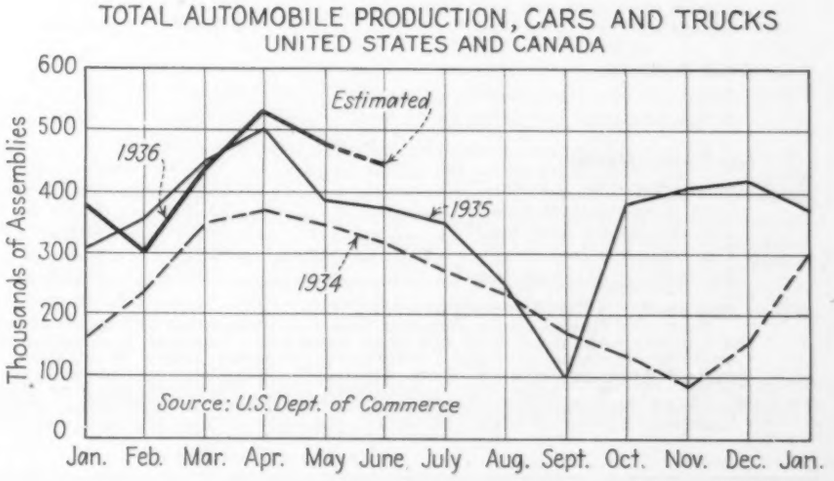
Practically all steel has been bought for 1936 jobs. Only one or two small rush orders have been reported to fill in depleted stocks. Fisher Body entered the market in a big way on sheets last week for what amounts to almost a 60-day run on the 1937 model cars. This material was purchased at second quarter prices and undoubtedly deliveries on it will be extended up until the end of this month. Practically no other second quarter buys have been reported other than forging stock on the part of Chrysler and similar material on the part of Buick, which is pretty well set on its new program.

Buick's Record Sales

Buick estimates its sales in 1936 will probably reach 170,000 units, compared with 107,000 last year and 43,000 in 1934. Buick spent $15,000,000 last year in a modernization and rehabilitation program that swept through all departments from foundry and forge shop to the metal finishing end. It demonstrated, perhaps better than any other company, how modernization pays, since Buick has made the largest relative gain over last year of any of the General Motors units. Even these new facilities, however, have been taxed to the limit and an extensive expansion program involving the immediate outlay of $1,500,000 in new buildings was announced last week by the company. Ground will be broken at once for the first unit of five projects which will add some 400,000 sq. ft. of floor space. An entirely new transmission plant will be built, which will have a capacity of 70,000 transmissions a month, since the Buick plant manufactures such components for both Pontiac and Oldsmobile. This plant will be 1027 x 138 ft., monitor type, one story in height. The present transmission building will be used as a service parts manufacturing division.

A new heat-treating building will be erected to handle transmission parts and another heat-treating department will be constructed for the gear and axle plant. Another new building to be erected will house the master mechanics division, works engineering, personnel, metallurgical and standards divisions and a branch of the purchasing department.

General Motors' new stamping plant just outside Grand Rapids is rapidly nearing completion. The structure of the die shop has already been finished and operations are about to commence there, followed by the press room and metal shop, as soon as these departments can be placed in readiness and the machinery installed. These activities should be completed within the next 60 days. Some extremely large die room equipment has been installed at this plant. These machines are capable of handling some of the largest dies, such as those required in the fabrication of turret tops, weighing as much as 70 tons. Fires are being started in the carburizing and hardening ovens to dry the brick work in the heat-treating department, while work proceeds on the lead and cyanide pots, as well as the electric drying furnace.



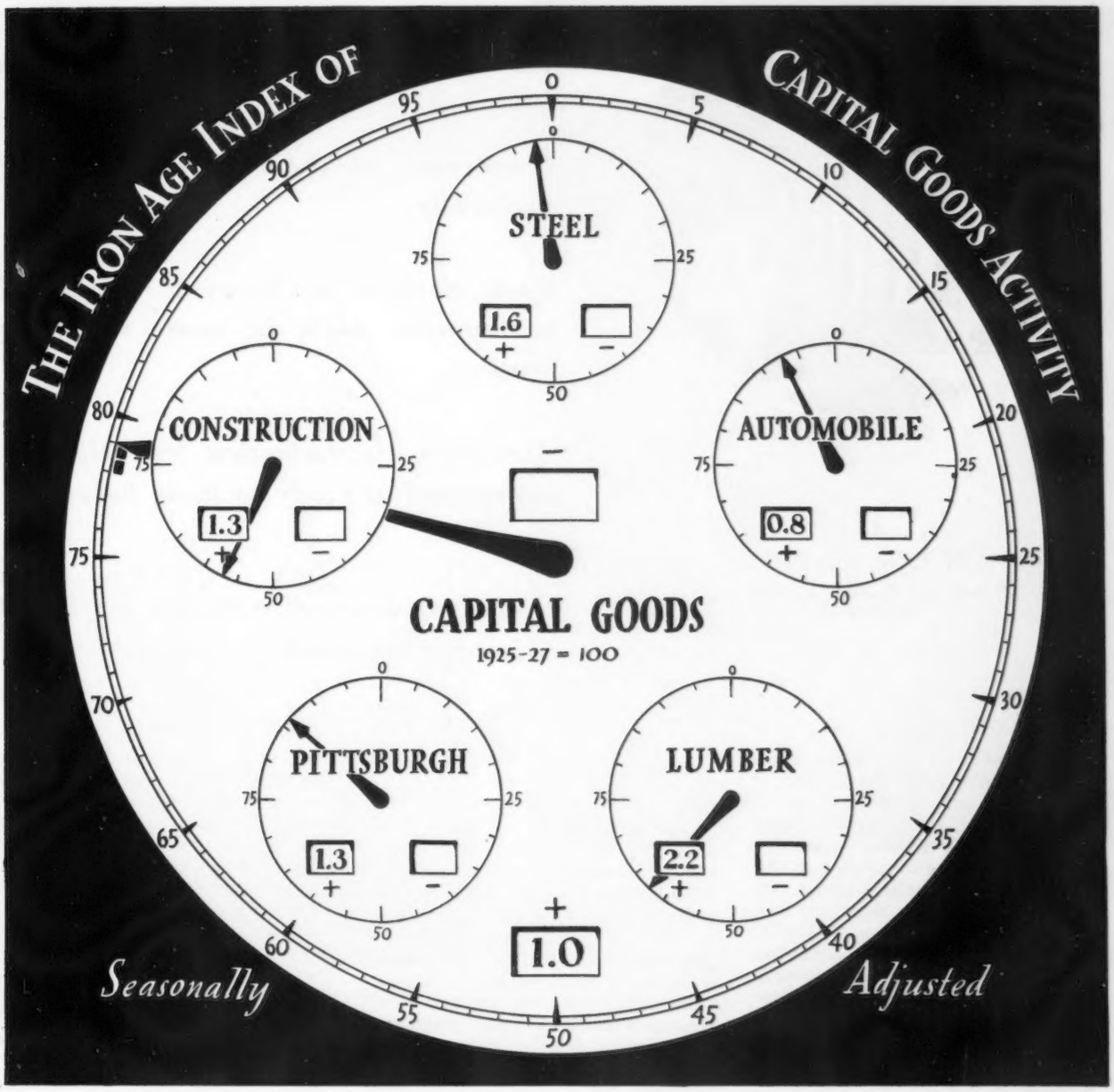
Current Metal Working Activity Statistically Shown

These Data Are Assembled by The Iron Age from Recognized Sources and Are Changed Regularly as More Recent Figures Are Made Available.

	May, 1936	April, 1936	May, 1935	Five Months, 1935	Five Months, 1936
Raw Materials:					
Lake ore consumption (gross tons)[a]	.....	3,485,293	2,466,585	12,157,235	.....
Coke production (net tons)[b]	3,837,323	3,554,617	2,850,236	14,362,635	17,502,489
Pig Iron:					
Pig iron output—monthly (gross tons)[c]	2,648,401	2,403,683	1,727,095	8,246,486	10,887,986
Pig iron output—daily (gross tons)[c]	85,432	80,125	55,713	54,612	71,631
Castings:					
Malleable castings—production (net tons)[d]	.....	50,954	34,729	204,349	.....
Malleable castings—orders (net tons)[d]	.....	47,933	31,136	194,560	.....
Steel castings—production (net tons)[d]	.....	63,087	30,646	153,260	.....
Steel castings—orders (net tons)[d]	.....	83,188	29,083	152,113	.....
Steel Ingots:					
Steel ingot production—monthly (gross tons)[e]	4,046,253	3,942,254	2,633,661	13,783,987	17,341,490
Steel ingot production—daily (gross tons)[e]	155,625	151,625	97,543	106,031	133,396
Steel ingot production—per cent of capacity[e]	70.91	69.09	44.06	47.90	60.78
Finished Steel:					
Trackwork shipments (net tons)[e]	7,314	7,031	4,228	17,365	28,085
Steel rail orders (gross tons)[e]	8,800	150,057	28,215	252,807	583,148
Sheet steel sales (net tons)[f]	191,511	190,269	149,725	1,016,028	946,647
Sheet steel production (net tons)[f]	224,056	217,975	191,507	1,082,584	1,064,210
Fabricated shape orders (net tons)[g]	145,553	*104,849	60,448	398,300	612,249
Fabricated shape shipments (net tons)[g]	134,623	*127,793	84,115	413,030	516,768
Fabricated plate orders (net tons)[d]	.....	29,900	17,630	81,548	.....
Reinforcing bar awards (net tons)[e]	19,725	26,700	12,080	99,920	162,090
U. S. Steel Corp. shipments (tons)[h]	984,097	979,907	598,915	2,975,891	4,145,285
Ohio River steel shipments (net tons)[i]	86,004	74,110	78,106	328,028	356,166
Fabricated Products:					
Automobile production, U. S. and Canada[k]	480,571	527,726	385,427	1,996,180	2,125,422
Construction contracts, 37 Eastern States[l]	.....	*$234,631,600	$126,720,100	$548,501,600	.....
Steel barrel shipments (number)[d]	721,021	730,099	554,102	2,531,234	3,143,629
Steel furniture shipments (dollars)[d]	$1,451,199	$1,633,633	$1,214,163	$5,761,399	$7,741,223
Steel boiler orders (sq. ft.)[d]	723,343	783,961	643,154	2,281,288	3,530,731
Locomotive orders (number)[m]	10	15	2	13	98
Freight car orders (number)[m]	9,677	3,650	2	1,432	22,234
Machine tool index[n]	118.9	125.7	73.3	†67.1	†116.6
Foundry equipment index[o]	165.4	134.0	100.7	†94.4	†138.1
Foreign Trade:					
Total iron and steel imports (gross tons)[p]	59,391	49,277	47,719	149,655	259,235
Imports of pig iron (gross tons)[p]	15,296	11,982	23,174	46,903	80,714
Imports of all rolled steel (gross tons)[p]	20,994	23,847	18,939	73,355	108,053
Total iron and steel exports (gross tons)[p]	314,950	301,987	286,599	1,306,354	1,336,640
Exports of all rolled steel (gross tons)[p]	93,686	101,522	62,161	345,994	432,927
Exports of finished steel (gross tons)[p]	86,346	90,116	56,612	304,956	399,780
Exports of scrap (gross tons)[p]	217,439	190,845	209,425	900,844	885,762
British Production:					
British pig iron production (gross tons)[r]	661,000	629,800	558,900	2,643,700	3,105,000
British steel ingot production (gross tons)[r]	963,000	*984,200	853,300	4,031,200	4,778,300
Non-Ferrous Metals:					
Lead production (net tons)[s]	41,551	38,073	37,358	159,477	185,197
Lead shipments (net tons)[s]	33,125	40,457	32,341	168,454	178,001
Zinc production (net tons)[t]	44,905	43,252	34,572	175,239	208,785
Zinc shipments (net tons)[t]	43,977	42,311	35,627	185,619	210,833
Deliveries of tin (gross tons)[v]	5,235	6,235	3,950	23,775	29,225

* Revised. † Three months' average.

Source of figures [a] Lake Superior Iron Ore Association; [b] Bureau of Mines; [c] THE IRON AGE; [d] Bureau of the Census; [e] American Iron and Steel Institute; [f] National Association of Flat-Rolled Steel Manufacturers; [g] American Institute of Steel Construction; [h] United States Steel Corp.; [i] United States Engineer, Pittsburgh; [k] When preliminary, from Automobile Manufacturers Association—Final figures from Bureau of the Census; [l] F. W. Dodge Corp.; [m] *Railway Age;* [n] National Machine Tool Builders Association; [o] Foundry Equipment Manufacturers Association; [p] Department of Commerce; [r] British Iron and Steel Federation; [s] American Bureau of Metal Statistics; [t] American Zinc Institute, Inc.; [v] New York Commodities Exchange.



Same Week Last Month	*Preceding Week*	*Last Week*		*Same Week 1935*	*Same Week 1934*	*Same Week 1933*
75.5	**78.0**	**79.0**	**COMBINED INDEX**	**58.0**	**58.5**	**59.0**
88.5	96.2	97.8	Steel Ingot Production	54.7	60.1	74.4
94.0	91.9	92.7	Automobile Production	83.6	76.9	56.8
59.2	60.1	62.3	Lumber Shipments	52.2	51.6	63.6
82.8	84.9*	86.2	Pittsburgh Industrial Production	60.3	66.5	69.2
53.8	55.7	57.0	Heavy Engineering Construction	40.2	36.8	31.6

ANOTHER advance has been made by THE IRON AGE's weekly capital goods index, and the level of activity now stands at 79 per cent of the base period average, contrasted with 78 per cent the previous week, 58 per cent a year ago and 58½ per cent two years ago. Relative to these years the index's present showing is between 35 and 36 per cent greater.

All separate indices, which combine to form the general index, shared in last week's gain. There were no recessions. To some extent this was due to a tendency on the part of productive operations to resist seasonal decline, but not wholly so. The index of lumber shipments, for example, was aided both by a gain in actual volume and seasonal adjustment. The same was true of the heavy construction index. Steel ingot operations held at 71 per cent, although it is customary at this time for activity to wane. Accordingly, this index was adjusted upward. Production of automobiles receded slightly. The loss, accounted for solely by several worker outings in the Detroit area, was less than seasonal.

Components of The Index (1) Steel Ingot Production Rate, from THE IRON AGE; (2) Automobile Production, from Cram's Reports, Inc.; (3) Revenue Freight Carloadings of Forest Products, from Association of American Railroads; (4) Industrial Productive Activity in Pittsburgh District, from Bureau of Business Research of University of Pittsburgh; (5) Heavy Construction Contract Awards, from *Engineering News-Record*.

WASHINGTON. . . . . .

. . . Democratic platform is masterpiece of ambiguity.

o o o

. . . Basic changes in American system of government might be made within its scope.

o o o

. . . Anti-price discrimination law might be interpreted to apply to basic industries.

o o o

. . . Healey government contracts act is not objectionable except in principle.

o o o

BY L. W. MOFFETT
Resident Washington Editor, The Iron Age

o o o

WASHINGTON, June 30.—Tomes have been written and will be written about the platform which was brought forth last week at the boisterous, wordy, circus-like convention of the so-called Democratic party in Philadelphia. . . . More or less strange as it may seem, Franklin Delano Roosevelt was renominated by acclamation for the Presidency. . . . As a grand climax to the show he went to Philadelphia and, in the presence of a frenzied crowd in Franklin Field, accepted the nomination in what has been called a snappy address, although it was reported to have been toned down somewhat from the original draft. . . . He accepted it just as eagerly as he did four years previously when, in his still irrepressible zeal for showmanship, he flew to Chicago and accepted 100 per cent what was a real Democratic platform. . . . That platform is unused but not forgotten by the many Democrats who have taken a walk and many more who, by reason of political expediency, or otherwise, remain under the banner of the nondescript New Deal; but some of them are its severest critics in the cloakrooms. . . . It is called nondescript because its many oscillations make it difficult to classify, though it may be said that it is shot through with a decidedly leftist slant. . . . And it calls for a tremendous bureauacracy and a hankering for regimentation that can't exist under the Constitution as it now stands. . . .

But as to what has been ably said and will be ably said about the New Deal platform adopted at Philadelphia, isn't the fundamental thing that of living up to promises? . . . If the Philadelphia New Deal platform, good, bad or indifferent, is to be a mere scrap of paper, what do its contents matter? . . . Inasmuch as the Chicago platform was disregarded, what reason is there for thinking the Philadelphia platform will not be treated likewise? . . .

Such adjectives as skillful, artful and adroit have been used to describe the Philadelphia platform and these synonomous terms appear to be appropriately descriptive. . . . For ease of reading, the well-written document, a better literary effort than the platform adopted in Cleveland by a much-changed Republican party, it seems clear that it is designed to be a vote-catchall. . . . It has the elements of radicalism and of conservatism . . . the latter perhaps intended to intrigue the "right" vote.

The most important plank in the Philadelphia platform, the one of most significance to the country and all its parts, industry, agriculture, etc., is a well written declaration dealing with the constitution. . . . Despite its phraseology, however, it is clear that it definitely provides for a wide departure from the American system of government . . . and it is a common view that if the New Deal is continued in office it will move directly to the suggested power to reconstitute the Federal Government so as to give authority to take over jurisdiction now resting exclusively in the States. . . . "We know that drought, dust storms, floods, minimum wages, maximum hours, child labor and working conditions in industry, monopolistic and unfair business practices cannot be adequately handled exclusively by 48 separate State legislatures, 48 separate State administrations and 48 separate State courts," says the New Deal plank. "Transactions and activities which inevitably overflow State boundaries call for both State and Federal treatment. We have sought and will continue to seek to meet these problems through legislation within the constitution." . . .

Then after this pronouncement the plank adds that if the problems cannot be solved "by legislation within the constitution, we shall seek such clarifying amendment as will assure the legislatures of the several States and to the United States, each within its proper jurisdiction, the power to enact those laws which the State and Federal legislatures, shall find

On a Broad Front

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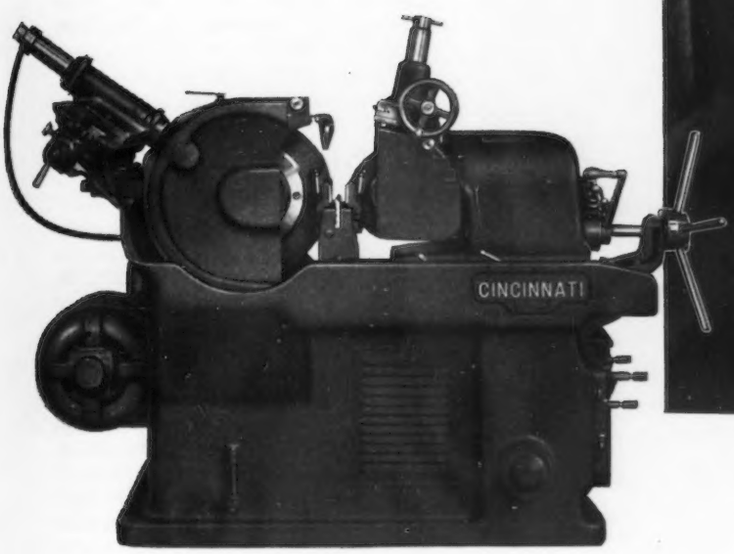

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necessary, in order adequately to regulate commerce, protect health and safety and safeguard economic security. Thus we propose to maintain the letter and spirit of the constitution." . . . Despite the last sentence, apparently intended to disarm, one may run and read what this means. . . . It is a proposal for an all-encompassing Federal bureaucracy, a dictatorship. . . . Power to regulate commerce, for instance, covers an enormously wide scope. . . . The Republican platform, together with Landon's own declaration, is much milder. . . . He stated that if necessary he would ask for a constitutional amendment enlarging the powers of the *STATES* to give them control for the regulation of minimum wages for children and women. . . . By contrast the New Deal proposes Federal control of wages, commerce, and what not. . . . This point alone sufficiently confirms the declaration of Jobmaster Farley that the New Deal is the issue. . . .

The document is anything but self-effacing. . . . The New Deal liberally peppers the platform with claims of achievement that "we" have accomplished, many claims so wide of the mark that they are ludicrous. . . . But it has pleased organized labor as denoted by approval announced by John L. Lewis and William Green. . . . Quite likely the declaration proposing Federal control of wages, etc., is as gratifying to them as is the labor plank itself. . . . Allowing for overstatement as to what the New Deal has done for labor, the plank is subject to further criticism by reason of its vagueness which greatly widens its skating area. . . . It promises to continue "to protect the worker and we will guard his rights, both as a wage-earner and consumer, in the production and consumption of all commodities, including coal and water power and other natural-resource products." . . . The final clause appears to be entirely superfluous inasmuch as "all commodities" precedes it, but specific mention of coal, etc., quite conceivably reflects a request by John L. Lewis. . . . Guarding the workers' rights by the properly constituted authority, Federal or State, with neither attempting to encroach on the jurisdiction of the other, is wholly commendable and desirable. . . . The implication in the plank, however, is what arouses concern. . . . Does it mean that, tied in with the constitutional plank, it looks to Federal control of wages, production and consumption? . . . It gaily disregards the idea of guarding the rights of industry. . . . And carrying out this spirit of omission the New Deal sets forth the fact that it has "written into the law of the land his (worker's) right to collective bargaining and self-organization free from the interference of employers." . . . The Cleveland platform guarantees similar rights but does not limit interference to employers. . . . It bars "coercion from any source," something which organized labor does not like. . . .

Business, jittery over New Deal performance, including its new program of taxation that is little short of confiscation, is assured that the New Deal has taken it out of red, though much business is not out of the red and business now in the black may slide back into red if it is taxed to death and otherwise hamstrung. . . . Business also was told it has been freed from the "ravages of cutthroat competition," yet outbursts of the Federal Trade Commission and Secretary of the Interior Ickes indicate that they would like to see such competition prevail in the steel industry. . . .

Another humorous touch on an extremely serious problem is a promise of a "retrenchment" program as to taxes, spending, national debt and a balanced budget. . . . Such a promise has been made before and it was an idle promise. . . . The platform, in its flatulency as to bringing about recovery, says nothing of the 11,000,000 who remain unemployed and of the alarming all-time deficit record. . . . Nor of the expenditure of $2 for every $1 taken in. . . . Nor of the many utterly useless and worse than useless bureaus and employees who are taxeaters. . . .

The Cleveland platform has its hazy points but the New Deal platform is dotted with them. . . . And often phrasing is so cunning that it lends itself to various interpretations. . . . These telltale features would indicate that a ghost of the Delphic oracle must have been guiding the drafting of the New Deal platform. . . .

▼ ▼ ▼

Anti-Price Discrimination Law Difficult to Interpret

The recently enacted Patman-Robinson anti-price discrimination law is proving difficult to interpret, even by lawyers who are experts at deciphering legislation. Debates in Congress by students of the legislation reflected conflicting interpretations of its provisions. It has been criticized on the ground that it contains conflicting provisions. It is likely that sooner or later it will go to the Supreme Court both for interpretation and to determine its constitutionality. Some analysts say the law is unworkable.

The Patman-Robinson law is an amendment to the Clayton anti-trust act and will be administered by the Federal Trade Commission.

It apparently will have little ef-

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fect on the iron and steel, metalworking, scrap and related lines. Nevertheless, it gives the commission broad control over discounts that might, for example, by farfetched interpretation, scale down those granted by the iron and steel industry on quantity purchases.

By Section 2 (a) of the new law the commission is given authority to establish quantity limits when it finds that available purchasers in greater quantities are so few as to make prices established for such quantities "unjustly discriminatory or promotive of monopoly." Manifestly this gives the commission wide discretion. No yardstick has been set up to determine what proportion of an industry will be considered a "few," what constitutes unjustly discriminatory prices or what is promotive of monopoly.

An outstanding purpose of the act is to prohibit bogus brokerage allowances, rebates, etc., which come within the inhibition against transactions that directly or indirectly discriminate in price between different purchasers of commodities of like grade and quantity. But it does not prevent differentials for quantities or methods of selling when such differentials make only due allowance for differences in the cost of manufacture, sale, or delivery.

Tightening the Clayton act, which prohibited discrimination only "where the effect of the discrimination may be to substantially lessen competition or tend to create a monopoly in any line of commerce," the new act incorporates the phrase "or to injure, destroy or prevent competition," a phrase that likely will require court interpretation in order to define its exact latitude.

Scrap dealers having in mind the quick price changes that frequently occur in the market for old material, have raised the question as to whether they would be subject to the law's penalties if they made two sales of scrap of like grade and quantity in a given day at different prices. A like question obviously could be raised with similar reasoning by iron and steel and other producers. Interpreters who have carefully studied the law to whom the question has been directed have said without exception that the law would not prohibit such sales. To support their position they point to a provision in Section 2 (a) "That nothing herein contained shall prevent price changes from time to time where in response to changing conditions affecting the market for or the marketability of the goods concerned," etc.

However, running counter to the principle of the English common law, well established in judicial procedure of this country, which places the burden of proof upon the complainant, Section 2 (b) provides that after a complaint has been made and proof presented that there has been discrimination in price, the burden of rebutting this prima facie case shall be upon the one charged with violation of the section. Thus a manufacturer accused of discrimination is charged with proving that there has been a change in market conditions justifying the change in price. So while changes in price can be made within the law, yet if action is brought the burden rests upon the seller if a case is brought against him. Criticism has been made that this might require the disclosure of costs at any given time. It has also been pointed out that the provision might prevent a seller,

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through fear of the law, from changing prices even though such changes are imperative in order to meet competition. But the prospect of such a development is relieved somewhat by another provision that the seller may rebut the prima facie case without any further proof of justification by showing that the lower price or the furnishing of services or facilities to any purchaser was made in good faith to meet competition.

Under Section 2 (f) the buyer as well as the seller is made liable for triple damages for "knowingly" inducing or receiving a discrimination in price which is prohibited.

Where a manufacturer is unable to contract with all of his customers who desire to purchase given quantities, because of limited facilities of production, or for other adequate reasons, he would be obliged to select his own customers and refrain from selling those customers whose wants he cannot supply with equal quantities. There can be discrimination in terms of sales but the terms cannot be used to discriminate in price.

▼ ▼ ▼

Government Contracts Act Is Objectionable Only in Principle

Much less drastic than the Walsh bill for which it was substituted, the effect of the Healey government contracts act on industry is going to depend largely on its administration. It is to be administered by the Department of Labor. Sensible exercise of authority granted to "make exceptions in specific cases or otherwise when justice or public interest will be served thereby" will remove onerous restrictions. But unless such an attitude in administration is adopted the act can be made a vehicle of much disturbance for industries doing business with the Government.

The matter of separating Government and private contracts in operating schedules is seen as one problem where there is a variance in private schedules from the Government requirements under the act. However, it has been pointed out that this may be smoothed out if the variance is not too great because of the exemptions and dispensation that may be granted. Actually in most major industries, such as steel, automotive, etc., the shortened hours prevailing exceed the requirement of the act for a 40-hr. week. In this connection, however, some of these industries operate under flexible hours, adjusted to schedule requirements and economic production. But under the terms of the act the Secretary of Labor may permit an increase in maximum hours of labor stipulated in the contract, but shall set a rate of time-and-a-half for overtime.

Perhaps the chief objection to the act as finally passed is its principle. It leads to concern lest it be used as a policy of Federal regimentation not alone as to Government business but as an entering wedge to expand the principle to all business, a form of restoring the discredited Blue Eagle. As is known, passage of the bill was "demanded" by the American Federation of Labor.

Representative Healey, Democrat, of Massachusetts, from whom the measure gets its name, because he had charge of it in the House, has given an analysis of it.

Mr. Healey pointed out that the act applies only to contracts exceeding $10,000 when the contractor is a manufacturer of or regular dealer in supplies and materials to be used in performance of the contract. This requirement is intended to eliminate bid brokers with no plants or regular establishments. "Kick-backs" are barred. By "kick-backs" are meant agreements by which an employee turns back part of his wages to his employer. The Secretary of Labor is required to fix minimum wages.

The act fixes as a standard, the 8-hr. day and the 40-hr. week. It prohibits the employment of females under 18 and of males under 16 years of age, bars sweatshops and convict labor.

The administrative section provides that the Secretary of Labor, with the consent of the States, may employ such State and local officers and employees as are found necessary. The Secretary of Labor is also given authority to make investigations and promulgate rules and regulations and to hold hearings. Exemptions and dispensations may be granted either under existing contracts in an emergency or where a particular industry may not be in a position to live strictly up to the provisions of the act. Authority is likewise given to the Secretary of Labor to make exemptions and dispensations where the facts so warrant in the opinion of the contracting officer. The act does not apply to construction work. Contracts as to wages and hours on Government financed building projects are covered by the Bacon-Davis act.

The Healey act also does not apply to purchases of supplies such as can usually be bought in the open market unless manufactured according to specifications.

The bill was signed by the President, June 30, and the act becomes effective 90 days after his signature.

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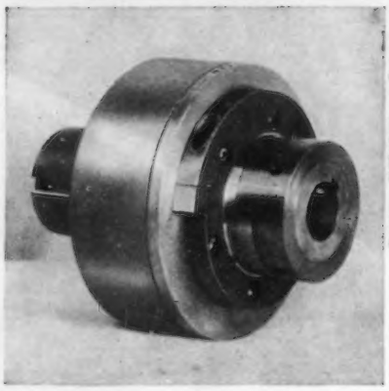

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Great Lakes Exhibition at Cleveland Features Romance of Iron and Steel

A GRAPHIC and spectacular picture of the iron and steel industry, including the mining and transportation of ore and the sequence of manufacturing processes that are required to convert the raw material into finished steel, is presented in models of equipment and huge murals depicting the Romance of Iron and Steel, which is an outstanding feature of the Great Lakes Exposition that opened in Cleveland June 27 and will continue until Oct. 4.

The definite purpose of the display is to familiarize the average exhibition visitor, people from all walks of life, with the methods that are followed and equipment used in the manufacture of steel. The display in the method of its presentation should prove of much interest to men engaged in steel-making activities, although no attempt has been made to show methods or equipment with which steel makers are not generally familiar.

Sponsored by the nation's largest steel companies, the exhibit sets the theme for the heavy industry division of the exposition and takes the visitor behind the scenes of the iron and steel-making industries.

Depicted on a hillside typical of the Minnesota iron ore ranges is a mine shaft in actual size. Inside this underground shaft shown through an opening at the side of the mine are tracks and switches for ore cars located along the floor of the tunnel. The walls and the ceiling are of iron ore.

An immense relief map of the Great Lakes region depicts the iron and steel and ore commerce of the Great Lakes. The lakes themselves are indicated by water filled basins. The loading docks at the upper lake ports and the gigantic loading machinery for rapidly moving ore out of the holds of lake freighters at unloading ports are shown by huge murals.

Methods of steel making in the past are indicated by an old-style forge with bellows and with a blast furnace of stone construction of the type used up to and into the last century. Another exhibit in this group is a beehive coke oven.

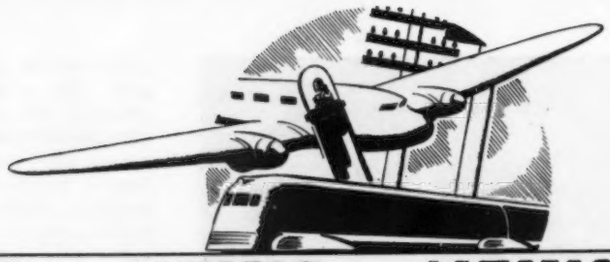
Numerous photographs show the steel-making processes. These depict the old-fashioned puddling process, the modern foundry, the electric furnace, the Bessemer converter, the pouring side of an open-hearth furnace, an enormous ladle pouring molten steel into ingot molds, an ore yard with a steel mill rising in the background, coke ovens and a scene in an ore yard with a blast furnace looming in the background.

The cast house of a blast furnace and the lower section of the furnace built in full size is one of the conspicuous exhibits. At the side of this is a modern foundry floor with flasks and other equipment. There is also a full-size modern model of a 125-ton ladle for pouring molten steel into ingot molds. Visitors may walk inside of this ladle and see photographs picturing the entire open-hearth process of refining iron into steel. Another exhibit is a working model of a two-high blooming mill.

A continuous hot strip mill is shown in a 34-ft. model which takes slabs of steel and rolls them into strip 1/32 in. thick. At the end of this mill is an automatic stamping press that stamps the sheet into miniature automobile parts. This operating model was built by the Youngstown Sheet & Tube Co. and is included in that company's exhibit. Other equipment shown includes an automatic wire-drawing block and a model of a butt-weld tube mill.

The exhibit was developed by Dr. A. A. Bates, associate professor of metallurgy, Case School of Applied Science, Cleveland, Myron S. Curtis, sales promotion manager, Youngstown Sheet & Tube Co., and James T. Dickson, coordinator of exhibits for the exposition.

THE huge cast house of a modern blast furnace, part of which is seen on the right, is an outstanding feature of the "Romance of Iron and Steel" exhibit. In the background, center, a stone blast furnace of the type in use from the 14th century until 100 years ago can be seen.



---NEWS----NEWS----NEWS----NEWS---

Machine Tool Electrification Forum at East Pittsburgh

MORE than 50 representatives of some 36 machine tool companies attended the four-day machine tool electrification forum held June 22-25 at East Pittsburgh under the auspices of the Westinghouse Electric & Mfg. Co. These representatives were chiefly members of the engineering departments of the various machine tool builders, the largest single groups being, perhaps, chief and assistant chief engineers and engineers in charge of electrical development.

The meeting comprised eight formal sessions, prefaced by an address of welcome by Dr. S. M. Kintner. Talks were made by more than 18 Westinghouse engineers, sales and manufacturing executives. A visit to the Westinghouse laboratories on the evening of June 22 was an outstanding feature, and inspection trips included an afternoon visit to the motor and motor control manufacturing departments of the East Pittsburgh works. Holding of similar future meetings was favored by individual representatives at the conclusion of the forum, but no definite plans have been made in this direction. Active in arranging and conducting the forum was W. D. Turnbull, manager machinery electrification, and R. S. Elberty, machine tool application engineer, of the Westinghouse company.

R. S. ELBERTY, machine tool application engineer, Westinghouse Electric & Mfg. Co., who was prominent in arranging and conducting the machine tool electrification forum reported in the adjoining columns.

Motors, control apparatus, application of special controls and motors, and gearmotors and meters were among the topics at the separate sessions. The viewpoints of buyers and users of machine tools were expressed at the final session by a number of executives of various Westinghouse works departments at East Pittsburgh.

Electrical and mechanical modifications of standard a. c. motors most commonly used in the machine tool industry and how such modifications affect the price as compared with standard motors were covered in an address on "A. C. Motors for Machine Tools," by T. R. Lawson, industrial division, and characteristics and design possibilities and limitations of a. c. motors were outlined by G. C. Schmidt, section engineer. The various types of d. c. motors, and their mechanical and electrical

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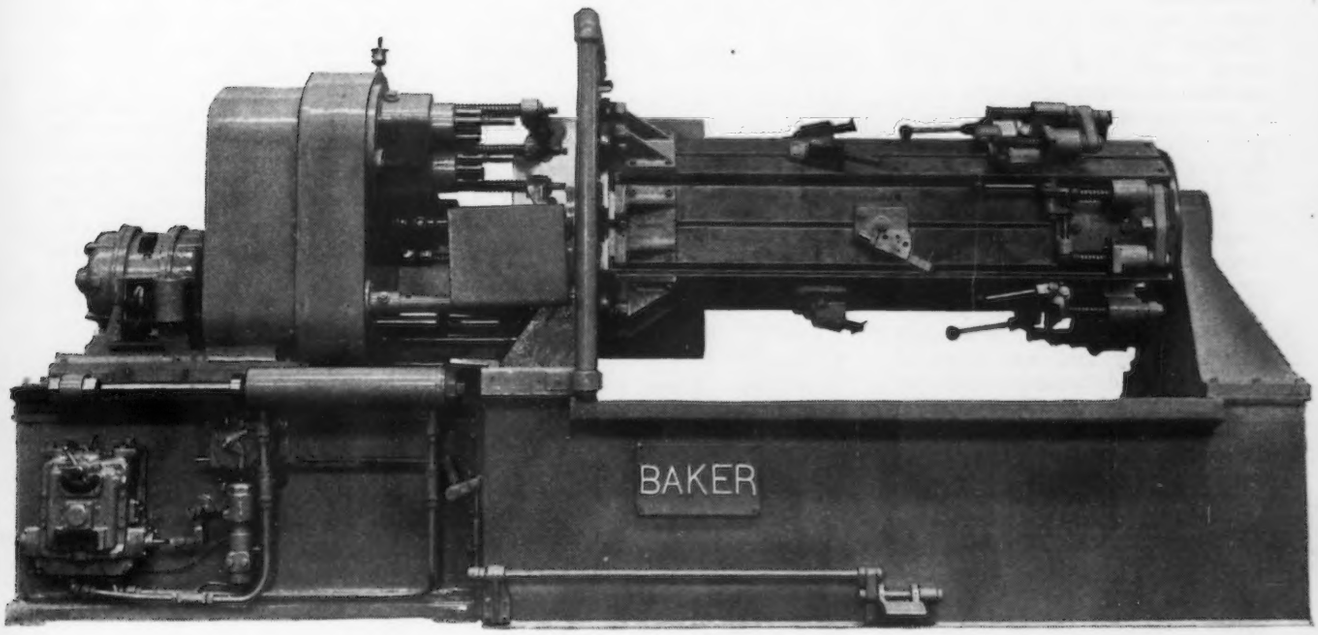

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modifications and their effects on costs were discussed by W. P. Kelly, sales manager control division, and the characteristics affecting the application of d. c. motors by C. B. Hathaway, section engineer, d. c. industrial motor engineering department.

A visit to the Westinghouse research laboratories featured the evening of June 22. An address by Dr. L. W. Chubb on "The Progress of Research" was followed by a lecture and demonstrations by Dr. Phillips Thomas. These demonstrations included the playing of a marimba by means of a light beam, a demonstration of the Knowles electronic grid glow tube in controlling a lighting circuit by means of the breath, and a new electrostatic air filter, by blowing cigarette smoke through which, only clean air emerges. Other demonstrations, in the laboratory itself, included the Westinghouse stroboscope, a noise meter for measuring the frequency and amplitude of noises, the determination of stresses photoelastically by means of polarized light, and the electrodynamic balancing of the armatures of small motors.

Interest in Controls

Considerable interest was shown throughout the meeting in control apparatus. In an address on "Some Thoughts On Control For Machine Tools," G. H. Carcelon, manager, control engineering, discussed performance, size and reliability. The necessity of considering the electrical equipment requirements of the ultimate customer was emphasized by L. E. Markle, control engineer, in a paper on "Application of Special Control to Machine Tools." Built-in controls and a variety of types of apparatus were also discussed by Mr. Markle, who illustrated the latter by reference to limit switches.

D. L. Pierce, section head, control engineering, in outlining some of the characteristics of magnetic contactors and relays, both a. c. and d. c., pointed out that the across-the-line motor starters combine good contactor device with overload relay in a single cabinet, which takes up the minimum of space and is easy to install. Combinations of contactor, overload relay, disconnect switch and fuse—all in one box—are also available; also air break circuit breakers in combination with the motor starter unit.

Copper oxide rectifiers were among the topics in the general discussion. These incorporate a copper disk treated with copper oxide on one side, the side so treated being non-conducting when current flows toward it, but is little affected when current flows in the opposite direction. It was said to be a useful device where a small amount of d. c. is needed and no source of d. c. is available. Rectifiers of this type are used to provide full or single wave rectification. They are suitable for high capacity for a short time. Means are being developed to keep them cool and to permit use of larger disks; this will widen their usefulness.

Drum controllers and limit switches were dealt with by W. H. Landenberger, control division. Switches used to limit the travel of machine parts are of three types, namely, track, hatchway, and gear or screw type. In reply to a question as to whether a limit switch was available that would control the motion of a machine within plus or minus 0.005 in., it was stated that there is a switch on the market that will operate to less than 0.001 in.

Electrification of individual machines is now being continued by the electrification of individual machine motions. Problems in applying motors for such motions were briefly reviewed by R. S. Elberty, Westinghouse machinery electrification division, who, in a blackboard talk, developed formulas for selecting the size of motor for intermittent and varying load cycle.

A miscellaneous equipment session featured an outline of the types, design and applications of gearmotors by R. S. Marthens and L. R. Botsai, manager and sales manager respectively, gearing division. The trend in the use of gearmotors was shown by both speakers to be sharply upward. At the same session, B. R. Hill, Westinghouse meter division, Newark, N. J., discussed the possible applications of meters on machine tools.

The final formal session comprised addresses by a number of executives of the works departments at East Pittsburgh, under the general topic of "Viewpoints of Buyers and Users of Machine Tools." Speakers and their subjects at this interesting session included: L. D. Rigdon, "How One Buyer Purchases Machine Tools"; J. R. Weaver, "How Proper Electrical Drive Improves Performance, Reduces Maintenance"; W. R. Risser, "Selection of Type of Motor from a Maintenance Viewpoint"; and E. N. Fabrizio, "Relation of Maintenance to Investment." Further reference to the papers at this session, which was under the chairmanship of T. I. Phillips, general works manager, East Pittsburgh, will be made in a forthcoming issue.

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Wyoming, Penna.
Sales Representatives in all principal cities.

Westinghouse Electric & Mfg. Co., East Pittsburgh, has declared a dividend of $1 a share on the common stock. In the two previous quarters 75c. a share was disbursed. A dividend of 87½c. was declared on the preferred stock, similar to that paid previously. Both dividends are payable Aug. 31, to stock of record July 31.

Cleveland Twist Drill Co. Celebrates 60th Anniversary

ON June 27, the Cleveland Twist Drill Co., Cleveland, celebrated its 60th anniversary.

Organized in 1876 by J. D. Cox and C. C. Newton, at first the partnership had only one lathe and one milling machine, and employed but one man. However, the busiess grew rapidly and, by 1879, the organization occupied a three-story building and was manufacturing a general line of milling machines and planers, as well as twist drills and reamers.

In 1880, Mr. Newton sold his interest in the business, which was taken over by F. F. Prentiss, who is now chairman of the board of directors. Mr. Cox continued to run the factory and design the machinery, while Mr. Prentiss sold the products. Fourteen years of discouragement passed. The year after the panic of 1893, however, the company paid off the last of its debts and headed toward success.

The Cleveland Twist Drill Co. was one of the first companies in Cleveland to install modern sanitary arrangements for its employees, such as wash basins, toilets and individual steel lockers. It also opened a restaurant where everyone in the employ of the company could buy a lunch at cost or less. It established a reading room, and pioneered in night classes until the Y. M. C. A. and other organizations undertook similar work.

In 1900, the employees presented the following testimonial to the company:

> ***"We, the undersigned, in the employ of The Cleveland Twist Drill Co., grateful for the many comforts and conveniences so thoughtfully and generously provided by the firm, take this method of expressing our thanks for the same, together with a sincere wish for the continued prosperity of Cox and Prentiss."***

Not content with watching out for the physical well-being of its employees, in 1915 the company inaugurated a profit-sharing plan, whereby every employee of the company shares in the annual profits, in proportion to his annual salary or wage. The company also established a special plan of profit-sharing notes, whereby any employee may deposit with the company, up to the limit of his annual salary or wage, any amount of money, upon which he is guaranteed a rate of 6 per cent, and, if the profits justify it, he will earn an extra dividend. Thus, excluding the war years, or from 1919 to 1935 inclusive, these notes have returned the employees who invested in them an average of more than 12 per cent per year. Since 1915, the company has paid out, in dividends and interest, on participating notes, as well as in the profit-sharing plan, more than $2,100,000.

The company has pioneered, during its 60 years, in metallurgical research. In 1933, it obtained and developed a patent on a new type of high speed tool steel, the base of which is molybdenum rather than tungsten. This steel is now meeting with a widespread acceptance for a variety of requirements, and the results are between 15 and 20 per cent better than the old type of tungsten base steel.

Steel Industry States Attitude Toward Unionization Drive Now Under Way

THE position of the steel industry in the face of the drive to unionize its employees inaugurated under the leadership of John L. Lewis was set forth over the week-end in a statement issued through the American Iron and Steel Institute.

The statement follows:

A campaign to unionize the employees of the steel industry has been announced.

In order that the employees and the public may know the position of the steel industry in the face of the threatened drive, the industry makes this statement through the American Iron and Steel Institute.

Persons and organizations not connected with the industry have taken charge of the campaign.

There are many disturbing indications that the promoters of the campaign will employ coercion and intimidation of the employees in the industry and foment strikes.

The objective of the campaign is the "closed shop," which prohibits the employment of anyone not a union member. The steel industry will oppose any attempt to compel its employees to join a union or to pay tribute for the right to work.

No employee in the steel industry has to join any organization to get or hold a job. Employment in the industry does not depend upon membership or non-membership in any organization. Advancement depends on individual merit and effort. These are

"HERCULES" RED-STRAND REG. U. S. PAT. OFF. WIRE ROPE

Furnished in Flattened Strand, Round Strand, Preformed, Steel Clad and Non-Rotating constructions.

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fundamental American principles to which the industry will steadfastly adhere.

The steel industry believes in the principles of collective bargaining, and it is in effect throughout the industry.

The overwhelming majority of the employees in the steel industry recently participated in annual elections under their own representation plans and elected their representatives for collective bargaining. The elections were conducted by the employees themselves by secret ballot. One of the purposes of the announced campaign is to overthrow those plans and the representatives so elected.

The steel industry is recovering from six years of depression and huge losses, and the employees are now beginning to receive the benefits of increased operations. Any interruption of the forward movement will seriously injure the employees and their families and all businesses dependent upon the industry, and will endanger the welfare of the country.

The announced drive, with its accompanying agitation for industrial strife, threatens such interruption.

The steel industry will use its resources to the best of its ability to protect its employees and their families from intimidation, coercion and violence and to aid them in maintaining collective bargaining free from interference from any source.

. . PERSONALS . .

T. E. MILLSOP has been elected president of the Weirton Steel Co., Weirton, W. Va., succeeding the late John C. Williams. Born at Sharon, Pa., on Dec. 4, 1898, he received his education in the public schools of his native town. At the age of 15 years he went to work in the open-hearth department of Carnegie Steel Co. at Sharon, Pa. During the next three years he held open-hearth jobs in steel plants at Sharon, Farrell, Pa., Ensley, Ala., and Butler, Pa. During the World War he served as a combat pilot with the Canadian and American Armies for three years, being discharged in March, 1919, with the rank of captain. He then joined the Youngstown Sheet & Tube Co. in the blast furnace department. In 1920 he returned to Sharon, where he got a job driving rivets with the Standard Tank Car Co. Within a short time he was made foreman of the plate department. In succession, he was promoted to assistant superintendent of this department, then director of purchases, and production manager. He resigned from the latter position in 1925 to enter the scrap business with the Rotter-Speer Co., Cleveland. He joined the Weirton Steel Co. in December, 1926, as a salesman. In 1929 he became assistant sales manager, and on May

T. E. MILLSOP

1, 1931, he was appointed assistant to the president. He was elected vice-president on Jan. 1, 1934, and in July, 1935, was made executive vice-president, and has been the acting head of the firm for the past year, due to the illness of Mr. Williams.

❖ ❖ ❖

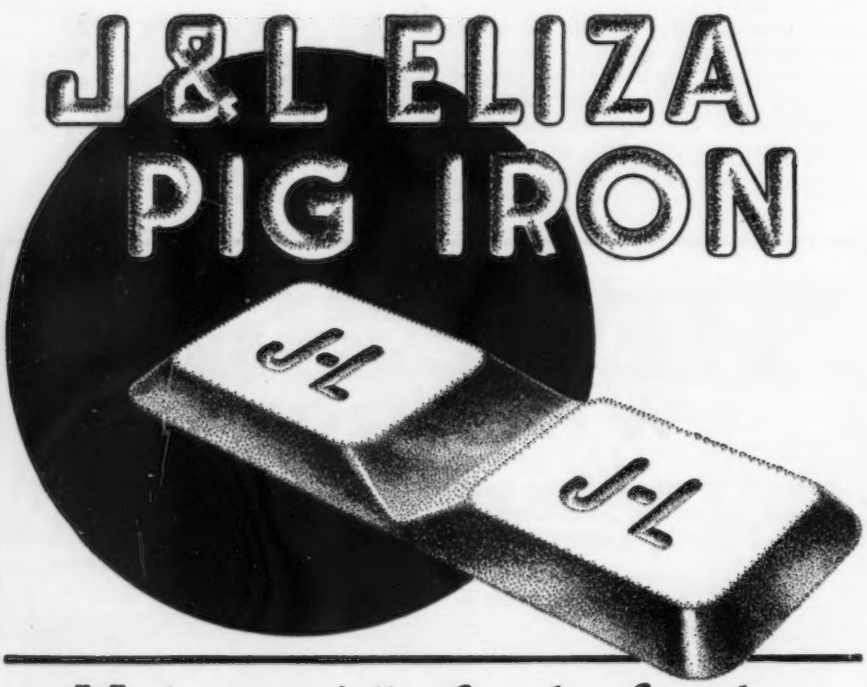
L. RAY BUCKENDALE has been named vice-president in charge of engineering at the Timken-Detroit Axle Co., Detroit. Mr. Buckendale has been connected with the company in various engineering capacities since 1911. Prior to his recent advance he held the post of executive engineer. He has been prominent in the Society of Automotive Engineers, and at the present time is chairman of the axle and wheels division of the S.A.E. standards committee and also chairman of the rating committee for motor coaches and motor trucks.

❖ ❖ ❖

CHARLES M. HOOVER was recently honored by Henry Disston & Sons, Inc., Philadelphia, on the occasion of his completion of 61 years of service with the company. S. Horace Disston, vice-president and general manager, presented him with a check.

❖ ❖ ❖

FRANK M. SMITH, formerly vice-president and general manager of



Made especially for the foundry and malleable trade . . . no scrap

JONES & LAUGHLIN STEEL CORPORATION
AMERICAN IRON AND STEEL WORKS
PITTSBURGH, PENNSYLVANIA

J&L STEEL

the Stout Motor Car Co., is now assistant to the president of the American Coach & Body Co. in Cleveland. Mr. Smith has had a wide experience in the fabrication of airplanes, rail cars, buses and automobiles. He was at one time superintendent of the Moth Airplane Co. at Lowell, Mass. The company he joined on July 1 specializes in the manufacture of buses for public utilities.

❖ ❖ ❖

WILLIAM E. BLACKBURN, formerly in charge of the Cincinnati office of the Carnegie-Illinois Steel Corp., has been made manager of

W. E. BLACKBURN

sales of the newly-opened Indianapolis district sales office of the company. Headquarters of the new office will be in the Chamber of Commerce Building, Indianapolis.

❖ ❖ ❖

CHARLES E. NELSON, JR., has been appointed coordinator of purchases, production and planning activities of the Waukesha Motor Co., Waukesha, Wis., to fill the vacancy caused by the death of Albert S. Cronk. He has been associated with the firm since 1929 and was appointed factory production manager in 1935, following his return from Oakland, Cal., where for a time he served the Fageol Truck & Coach Co., a Waukesha affiliate, as secretary and treasurer.

❖ ❖ ❖

HERBERT N. FORSBERG, who has been identified for many years with the Geuder, Paeschke & Frey Co., Milwaukee, has been appointed sales manager of the contract manufacturing division, succeeding the late Louis Reinhard.

❖ ❖ ❖

C. Q. SWENSON has been made Michigan representative, with offices at 2842 West Grand Boulevard, Detroit, for the Michiana Products Corp., Michigan City, Ind.

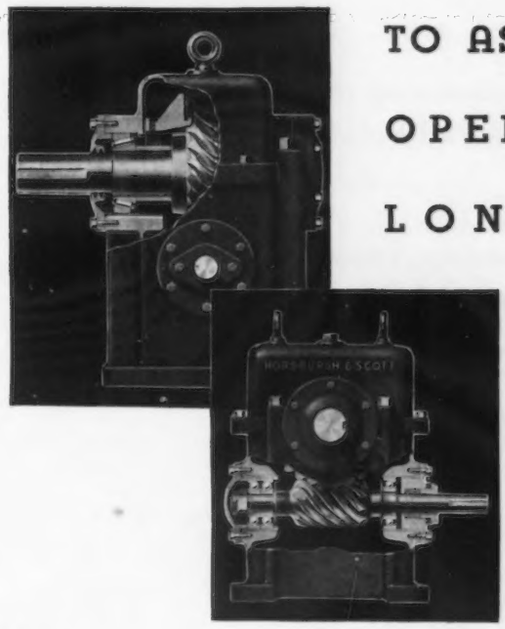
❖ ❖ ❖

S. S. BUCKLEY, formerly Eastern representative of the Vulcan Mold & Iron Co., has been placed in charge of sales of the Superior Mold & Iron Co., Penn, Pa. He has had wide experience in mold practice and is familiar with electric steel requirements, having served as president of the Onondaga Steel Co., Syracuse, N. Y.

❖ ❖ ❖

JOSEPH BAUER, manufacturers' representative, 200 Broadway, New York, and successor to C. R. Gier Co., has been appointed exclusive agent for down-grip machine vises, described in THE IRON AGE, Oct. 17, 1935, and formerly marketed by the Gier company.

ACCURATE...



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for right-angle drives in ratios up to 100 to 1

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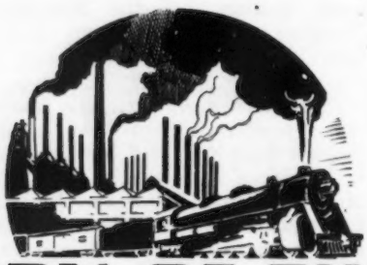


. . . . SUMMARY OF THE WEEK. . . .

. . . Steel output in first half exceeded 15-year average by comfortable margin.

o o o

. . . Production is advanced this week because of week-end holiday.

o o o

. . . Industry announces intention to protect employees from coercive organization.

THE steel industry enjoyed a relatively good half year. With daily ingot output in June having been at practically as high a rate as in May, total production of steel in the first six months was about 21,800,000 tons. This was above first half output in eight of the last 15 years and compares with an average six months' production in that period of only 18,890,000 tons.

The total amounted to 85 per cent of average first half production in the so-called boom years of 1926 to 1930 inclusive. It was far above the average for the last five depression years and exceeded average first half output in the 1921-25 period by a comfortable margin. While the trend over the next six months is difficult to forecast, the full year seems certain to be the best since 1930.

STEEL INGOT production this week is fractionally higher at 71½ per cent of capacity. The increase is explained by the fact that Independence Day is an official holiday and some producers are attempting to make up for the loss by heavier schedules early in the week. Output for the week will naturally fall well below the preceding six-day period.

AS most mills closed their second quarter books on flat-rolled products at least a week ago, recent activity has been in the heavier lines. The volume of identified structural projects on which bids were taken in the last few days was extremely large, but buyers will of course be granted 30 days in which to make final awards.

The week's fabricated structural steel lettings amount to 36,800 tons, compared with 16,140 tons in the preceding period. New projects reported call for 38,700 tons, and with 30,500 tons in last week's list, nearly 80,000 tons came out for bids in the last half of June.

THE late season vitality of the automotive industry is a source of astonishment to steel sellers. Not only are orders from the Detroit area well maintained, but increases are reported in some instances. It is evident that production quotas on 1936 models have been stepped up because of heavy consumer purchases, and the Ford Motor Co. has increased its schedule to five days a week in order to build up dealer stocks before changing models.

The high rate of current industrial activity was further emphasized last week by another rise in THE IRON AGE capital goods index, which advanced one point to 79 per cent of the 1925-27 average. It is estimated that machine tool orders in the first half were more than twice those placed in the corresponding 1935 period, but moderately prompt deliveries are still obtainable.

THE labor situation was clarified over the week-end when the industry stated its position through the American Iron and Steel Institute. It will oppose any attempt to compel its employees to join a union or pay tribute for the right to work. This is a clear indication that the Lewis unionization drive will be a fight to the finish. It was also intimated by a number of companies that wage increases will not be utilized as a weapon to fight organization.

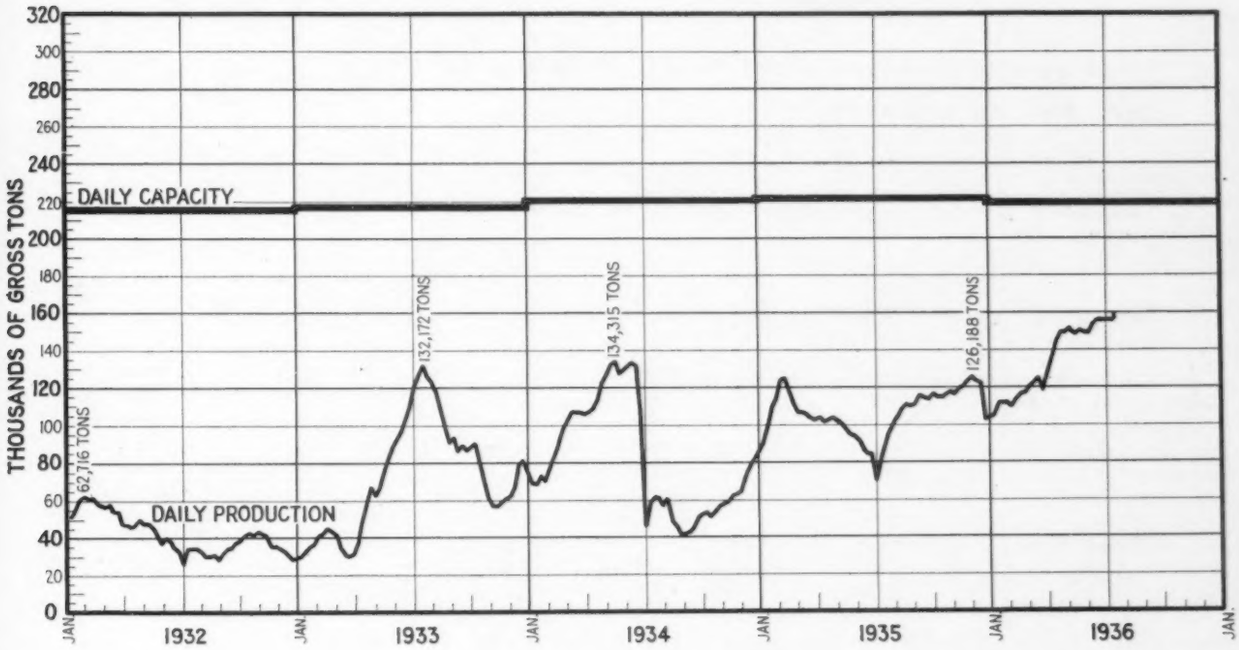
THIRD quarter prices on sheets and hot-rolled strip steel have been tested by spot demand since second quarter books were closed. As a result, THE IRON AGE composite price of finished steel has been advanced 50c. a net ton to 2.122c. a lb., and will be moved up an additional 74c. a ton next week when higher prices on bars, plates and shapes will become effective. The pig iron composite is unchanged at $18.84 a gross ton.

Urgent demand for scrap, occasioned by the high rate of open-hearth steel output, has led to increased old material prices and THE IRON AGE composite scrap price has been raised 21c. to $12.96 a gross ton. Advanced prices are reported from both Pittsburgh and Chicago, while the Philadelphia market is very strong.

STEEL INGOT PRODUCTION

Daily Tonnage of Bessemer and Open-Hearth Steel Ingots Produced by Weeks, 1932-1936

Current Week	Last Week	Weeks Ended July 6, 1935	July 7, 1934	July 8, 1933	July 9, 1932
156,923	155,826	70,842	46,240	121,338	24,870



STEEL INGOT PRODUCTION BY DISTRICTS: Per Cent of Capacity

District	Current Week	Last Week	Weeks Ended June 6, 1936	July 6, 1935	July 7, 1934
Pittsburgh	67.0	65.0	63.0	26.0	10.0
Chicago	72.0	74.0	67.0	37.5	28.0
Valleys	74.0	75.0	71.0	35.0	10.0
Philadelphia	48.0	46.0	44.0	24.0	19.0
Cleveland	79.0	79.0	77.0	21.0	15.0
Buffalo	90.0	85.0	80.0	35.0	10.0
Wheeling	96.0	96.0	90.0	38.0	40.0
Southern	57.0	57.0	67.0	25.0	50.0
Ohio River	63.5	67.0	80.5	50.0	20.0
Western	80.0	80.0	77.5	20.0	15.0
St. Louis	90.0	87.5	81.0	40.0	20.0
Detroit	100.0	100.0	100.0	95.0	100.0
Eastern	90.0	90.0	85.0	30.0	25.0
Aggregate	71.5	71.0	68.0	32.0	21.0
Average Year to Date	60.9	60.7	59.4	45.9	47.5

Weekly Booking of Construction Steel

From THE IRON AGE

	Week Ended June 30, 1936	June 23, 1936	June 2, 1936	July 2, 1935	Year to Date 1936	1935
Fabricated structural steel awards	36,815	16,140	20,350	7,000	542,235	396,795
Fabricated plate awards	1,670	7,235	1,000	2,475	135,300	87,355
Steel sheet piling awards	1,775	2,450	0	0	22,615	25,185
Reinforcing bar awards	23,350	5,000	4,100	4,400	194,345	125,855
Total Lettings of Construction Steel	63,610	30,825	25,450	13,875	894,495	635,190

. . . PITTSBURGH . . .

. . . Steel production advanced to offset Independence Day curtailment.

* * *

. . . Summer decline is not expected to be drastic.

* * *

. . . Scrap prices are advanced.

PITTSBURGH, June 30.—Steel ingot output in the Pittsburgh district is up two points to 67 per cent, mainly because mills are endeavoring to make up for production which will be lost on Independence Day. The operating rate this week is based on a five-day working schedule. Obviously the tonnage produced this week will be below last, and had it not been for the speed-up in operations because of the holiday, steel ingot output would probably have been down slightly. Wheeling operations remain at 96 per cent.

It is apparent that the peak in steel operations has been reached, and the tendency during the next few months will be downward. Because material purchased at second quarter quotations will be shipped during a large part of July, there is little likelihood of a drastic drop. Nor is there any evidence at this time of a sharp decline during the latter part of July or August, since it is fairly well established that an extremely large part of tonnage moved in June was for immediate consumption.

Demand for those items which did not enjoy an increase for third quarter is holding up relatively well. Inasmuch as the fear of labor disturbances has brought in some tonnage already, there is a chance that this factor might add some business during the summer months which would not normally come in. However, the wide publicity given to the possibility of labor disturbances is probably of a much larger magnitude than the facts would warrant.

Problems of production and delivery have taken the interest of all producers during the present week. Such heavy backlogs materialized during the past two or three weeks that it will be physically impossible to clear much of the material from the mills before at least the middle of July. This, of course, applies to those items which have been increased in price for third quarter delivery. While there have been a few specifications at the new prices, the total number has been extremely small.

Those customers whose requirements are for immediate delivery find themselves in a bad predicament. Conditions over the past four weeks have brought home the fact that consumers will have to anticipate their needs in order to get prompt shipment.

Tin plate production holds at recent levels, assuming that the Fourth of July be not taken into account. Packers' requirements are still coming in and the tone of general line can business is extremely satisfactory. Strip and sheet operations have obviously been affected by the last minute rush to make shipments. There is little doubt now that producers of these items will be moving steel well into July.

The outlook for the raw materials market is improving. There is a much firmer tone in scrap, the average price having gone up 12½c. If, and it is disputed in some quarters, the scrap market continues to be a barometer of forthcoming steel production, it would appear that good operations may be expected in the fourth quarter.

Pig Iron

Although consumers persist in ordering on a hand-to-mouth basis, production of pig iron, as far as the local merchant furnace is concerned, will probably be higher in June than in the previous month. Buying practices, brought about by stabilized prices, will undoubtedly continue unless prices are raised.

Semi-Finished Steel

Production takes precedence over specifications this week. Heavy orders were the rule during the latter part of last week, but at the present time new inquiries are practically non-existent. Considerable backlogs have accumulated, and all efforts by the mills will be directed toward cleaning up these tonnages as early as possible. It is expected that these carry-overs will have been shipped by at least the middle of July.

Bolts, Nuts and Rivets

Demand during the latter part of last week was stimulated, due to the increase in prices which will take effect on the first of July. While a portion of the orders being received were of a forward buying nature, nevertheless the continued improvement in car and structural building has accounted for the majority of bookings. Since material for identified projects can be ordered 30 days after increases in price, there will probably be no drastic let-down in aggregate specifications.

Bars

Any carry-overs in this district are expected by producers to be cleaned up by at least the middle of July. The avalanche of specifications reaching the mills during the latter part of June has taxed to capacity every bit of rolling mill equipment. Indications show that while a considerable part of the orders being received were actuated by a price protection policy, nevertheless by far the majority of bookings represented requirements for immediate consumption. Meanwhile it is expected that new specifications will be extremely light for at least the next month.

Steel Sheet Piling

Activity in the steel sheet piling market is brisk. Three awards involving approximately 176 tons each for the All American Canal have been awarded, two having gone to the Bethlehem Steel Co. and one to the Carnegie-Illinois Steel Corp. Inland Steel Co. was awarded the contract for 591 tons of piling, to be used on a Government project at Palmer, Kan. Bids are in on a Lakeworth bridge project at Lakeworth, Fla., involving 243 tons. The Treasury Department, New York State Procurement Division, will accept bids on July 2 for 118 tons of piling to be used at Bronx, New York. Approximately

A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous; Advances Over Past Week in Heavy Type, Declines in Italics

Rails and Semi-finished Steel

Per Gross Ton:	June 30, 1936	June 23, 1936	June 2, 1936	July 2, 1935
Rails, heavy, at mill	$36.37½	$36.37½	$36.37½	$36.37½
Light rails, Pittsburgh	35.00	35.00	35.00	35.00
Rerolling billets, Pittsburgh	28.00	28.00	28.00	27.00
Sheet bars, Pittsburgh	28.00	28.00	28.00	28.00
Slabs, Pittsburgh	28.00	28.00	28.00	27.00
Forging billets, Pittsburgh	35.00	35.00	35.00	32.00
Wire rods, Nos. 4 and 5, P'gh	38.00	38.00	38.00	38.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	1.80	1.80	1.80	1.70

Finished Steel

Per Lb.:	Cents	Cents	Cents	Cents
Bars, Pittsburgh	1.85	1.85	1.85	1.80
Bars, Chicago	1.90	1.90	1.90	1.85
Bars, Cleveland	1.90	1.90	1.90	1.85
Bars, New York	2.20	2.20	2.20	2.15
Plates, Pittsburgh	1.80	1.80	1.80	1.80
Plates, Chicago	1.85	1.85	1.85	1.85
Plates, New York	2.09	2.09	2.09	2.09
Structural shapes, Pittsburgh	1.80	1.80	1.80	1.80
Structural shapes, Chicago	1.85	1.85	1.85	1.85
Structural shapes, New York	2.06¼	2.06¼	2.06¼	2.06¼
Cold-finished bars, Pittsburgh	2.10	2.10	2.10	1.95
Hot-rolled strips, Pittsburgh	**1.95**	1.85	1.85	1.85
Cold-rolled strips, Pittsburgh	2.60	2.60	2.60	2.60
Hot-rolled annealed sheets, No. 24, Pittsburgh	**2.50**	2.40	2.40	2.40
Hot-rolled annealed sheets, No. 24, Gary	**2.60**	2.50	2.50	2.50
Sheets, galv., No. 24, P'gh	**3.20**	3.10	3.10	3.10
Sheets, galv., No. 24, Gary	**3.30**	3.20	3.20	3.20
Hot-rolled sheets, No. 10, Pittsburgh	**1.95**	1.85	1.85	1.85
Hot-rolled sheets, No. 10, Gary	**2.05**	1.95	1.95	1.95
Cold-rolled sheets, No. 20, Pittsburgh	**3.05**	2.95	2.95	2.95
Cold-rolled sheets, No. 20, Gary	**3.15**	3.05	3.05	3.05
Wire nails, Pittsburgh	2.10	2.10	2.10	2.60
Wire nails, Chicago dist. mill	2.15	2.15	2.15	2.65
Plain wire, Pittsburgh	2.40	2.40	2.40	2.30
Plain wire, Chicago dist. mill	2.45	2.45	2.45	2.35
Barbed wire, galv., P'gh	2.60	2.60	2.60	3.00
Barbed wire, galv., Chicago dist. mill	2.65	2.65	2.65	3.05
Tin plate, 100 lb. box, P'gh	$5.25	$5.25	$5.25	$5.25

On export business there are frequent variations from the above prices. Also in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

Pig Iron

Per Gross Ton:	June 30, 1936	June 23, 1936	June 2, 1936	July 2, 1935
No. 2 fdy., Philadelphia	$21.3132	$21.3132	$21.3132	$20.3132
No. 2, Valley furnace	19.50	19.50	19.50	18.50
No. 2, Southern Cin'ti	20.2007	20.2007	20.2007	19.2007
No. 2, Birmingham†	15.50	15.50	15.50	14.50
No. 2, foundry, Chicago*	19.50	19.50	19.50	18.50
Basic, del'd eastern Pa.	20.8132	20.8132	20.8132	19.8132
Basic, Valley furnace	19.00	19.00	19.00	18.00
Malleable, Chicago*	19.50	19.50	19.50	18.50
Malleable, Valley	19.50	19.50	19.50	18.50
L. S. charcoal, Chicago	25.2528	25.2528	25.2528	24.2528
Ferromanganese, seab'd carlots	75.00	75.00	75.00	85.00

†This quotation is for delivery in South; in the North prices are 38c. a ton under delivery quotations from nearest Northern furnace.

*The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

Scrap

Per Gross Ton:				
Heavy melting steel, P'gh	**$13.62½**	$13.50	$14.00	$11.75
Heavy melting steel, Phila.	12.00	12.00	12.00	10.50
Heavy melting steel, Chicago	**13.25**	12.75	12.75	10.00
Carwheels, Chicago	13.50	13.50	13.50	10.50
Carwheels, Philadelphia	13.75	13.75	13.75	11.25
No. 1 cast, Pittsburgh	14.75	14.75	15.25	13.25
No. 1 cast, Philadelphia	14.00	14.00	14.00	11.25
No. 1 cast, Ch'go (net ton)	12.00	12.00	12.00	9.00
No. 1 RR. wrot., Phila.	14.75	14.75	14.75	10.25
No. 1 RR. wrot., Ch'go (net)	11.50	11.50	11.50	7.75

Coke, Connellsville

Per Net Ton at Oven:				
Furnace coke, prompt	$3.65	$3.65	$3.65	$3.35
Foundry coke, prompt	4.25	4.25	4.25	4.00

Metals

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Electrolytic copper, Conn.	9.50	9.50	9.50	7.75
Lake copper, New York	9.62½	9.62½	9.62½	8.12½
Tin (Straits), New York	*41.00*	41.62½	44.00	51.87½
Zinc, East St. Louis	*4.85*	4.90	4.90	4.30
Zinc, New York	*5.22½*	5.27½	5.27½	4.67½
Lead, St. Louis	4.45	4.45	4.45	3.85
Lead, New York	4.60	4.60	4.60	4.00
Antimony (Asiatic), N. Y.	13.00	13.00	13.50	12.75

The Iron Age Composite Prices

	Finished Steel	Pig Iron	Steel Scrap
June 30, 1936	2.122c. a Lb.	$18.84 a Gross Ton	$12.96 a Gross Ton
One week ago	2.097c.	18.84	12.75
One month ago	2.097c.	18.84	12.92
One year ago	2.124c.	17.84	10.75
	Based on steel bars, beams, tank plates, wire rails, black pipe, sheets and hot-rolled strips. These products represent 85 per cent of the United States output.	Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.	Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	High	Low*	High	Low	High	Low
1936	2.130c., Jan. 7;	2.084c., Mar. 10	$18.84, Jan. 7;	$18.84, Jan. 7	$14.75, Feb. 26;	$12.67, June 9
1935	2.130c., Oct. 1;	2.124c., Jan. 8	18.84, Nov. 5;	17.83, May 14	13.42, Dec. 10;	10.33, April 23
1934	2.199c., April 24;	2.008c., Jan. 2	17.90, May 1;	16.90, Jan. 27	13.00, Mar. 13;	9.50, Sept. 25
1933	2.015c., Oct. 3;	1.867c., April 18	16.90, Dec. 5;	13.56, Jan. 3	12.25, Aug. 8;	6.75, Jan. 3
1932	1.977c., Oct. 4;	1.926c., Feb. 2	14.81, Jan. 5;	13.56, Dec. 6	8.50, Jan. 12;	6.43, July 5
1931	2.037c., Jan. 13;	1.945c., Dec. 29	15.90, Jan. 6;	14.79, Dec. 15	11.33, Jan. 6;	8.50, Dec. 29
1930	2.273c., Jan. 7;	2.018c., Dec. 9	18.21, Jan. 7;	15.90, Dec. 16	15.00, Feb. 18;	11.25, Dec. 9
1929	2.317c., April 2;	2.273c., Oct. 29	18.71, May 14;	18.21, Dec. 17	17.58, Jan. 29;	14.08, Dec. 3
1928	2.286c., Dec. 11;	2.217c., July 17	18.59, Nov. 27;	17.04, July 24	16.50, Dec. 31;	13.08, July 2
1927	2.402c., Jan. 4;	2.212c., Nov. 1	19.71, Jan. 4;	17.54, Nov. 1	15.25, Jan. 11;	13.08, Nov. 22

273 tons will be used on the barge canal improvement project in New York State, bids having been received June 25.

Cold-Finished Bars

It will be necessary to go back to 1930 to find as good a week as the past one in the matter of specifications. Producers have been actually swamped with bookings which have emanated from practically every buyer that has been on the books. Warehouses have specified heavily in anticipation of the increased quotations during the third quarter. Even though the industry as a whole will ship during July specifications placed during June, nevertheless producers will be taxed to capacity in order to get out the volume of material already booked.

Reinforcing Steel

With the majority of producers having published their quotations in conformity with the open price system, it is the opinion here that this movement will do much to bring about firmer conditions in this market. Practically all the material purchased at considerable concessions in the early part of the year has been shipped, and as a result over the past several weeks the outlook has been more encouraging from the standpoint of the producers.

Plates and Shapes

The plate and shape market has been actively stimulated by increased third quarter prices. Since customers will be allowed 30 days' grace on identified projects, many plans have been pushed, and as a result inquiries are fairly heavy this week. Present prices may be taken advantage of up to the end of July on specific jobs, with the material being delivered over the life of the project.

A fair proportion of the inquiries this week involve tonnages going into private projects. The largest inquiry involves 9000 tons, to be used in the construction of a manufacturing building for the Du Pont company at Philadelphia.

Tubular Products

The fear that orders for oil-country goods might be curtailed, due to a partial cessation of new drilling, has been groundless so far. The movement of this type of material has continued and has not shown any disposition to drop off. The recent improvement in specifications from warehouses for replenishment of standard pipe is still present. This is taken to indicate a livelier activity in home and plant rehabilitation, and to some extent new construction. Interest in line pipe orders, which had subsided during the past few weeks, has been revived due to reports that the Humble Oil Co. is seriously considering the construction of the pipe line mentioned several weeks ago.

Wire Products

No outstanding development has occurred in this market during the past week. The slight improvement noticeable in the merchant wire business is still in evidence, and a few more weak spots in the resale field have been strengthened. Manufacturing wire specifications are holding at recent levels. There is, however, no expectation of unusual activity in the near future.

Sheets

The last minute rush of consumers to take advantage of lower prices resulted in swollen order books during the latter part of last week. As a result, shipments will be extremely heavy during at least the first two weeks of July. The electrical manufacturing industry accounted for a rather heavy tonnage, while considerable material has been ordered by jobbers. Miscellaneous sources have been specifying freely. Since all classes of customers have come in for some forward buying, it is expected that new specifications will be extremely light over the next few weeks. There have been a few orders placed at third quarter prices.

Tin Plate

Tin plate demand holds at recent levels. There has been no discernible let up in packers' requirements, and the tone of general line can business indicates a continuance of demand from these sources. Within the next week or so, requirements for condensed milk cans will probably reach their peak as the season has been quite a few weeks behind this year. Total tin plate production will probably be down this week. However, on a daily basis the rate will be close to 95 to 98 per cent.

Strip Steel

Interest in this market is predominantly on production, since mills are actively engaged in cleaning up second quarter specifications. In some cases this will probably not be completed before the middle of July. Last minute orders during the latter part of the previous week emanated from miscellaneous sources.

Coal and Coke

The movement of coal from this district to the Lake regions during the past week has been dull, due to the waiting attitude on the part of buyers. A sharp increase in orders is expected momentarily, since freight charges will be reduced 5c. on July 1. If the estimates of the requirements of the Northwest are correct, this waiting attitude on the part of buyers will necessitate brisk activity during the remainder of the season. Meanwhile movement of foundry coke is holding at recent levels, and there are no indications of any let up in the near future.

Refractories

Both demand and shipment in this market have been exceptionally good during the past three months, and at this time show no signs of subsiding. As a result of increased pig iron, open-hearth and foundry operations quite a lot of repairs have been necessary. It is known that those units which are still unused are in bad condition and will need heavy repairs before being put in operation. Should steel and pig iron operations continue to improve, refractories manufacturers feel that their business will receive further support.

Tin Plate Manufacturers Answer FTC Decision

COUNSEL for some of the principal tin plate companies, following the Federal Trade Commission decision, expressed continued confidence in their contention, overruled by the commission, that their companies' action in eliminating "stock plate" had been salutary and necessary to stop violations of the NRA and the steel code.

"Our answer, filed last week by permission of the Federal Trade Commission," the attorneys stated, "shows that between 1931 and 1934 improved manufacturing methods had so materially reduced the quantity of tin plate produced and sold as 'stock plate' that our production thereof was fast becoming negligible and that about July, 1934, we determined for ourselves to discontinue entirely the classification 'stock plate' at or before the end of that year.

"The answer also shows that the eventual discontinuance of 'stock plate' classification was the result of corrective action within the industry made necessary by unfair practices, including overgrading, which had grown up under and in contravention of the National Industrial Recovery Act and the steel code. Not only has an inherently false classification been done away with but unethical practices, both under and outside the steel code, were stopped."

. . . . CHICAGO . . . .

. . . Heavy demand precludes pronounced summer slump.

o o o

. . . Ingot production declines two points to 72 per cent of capacity.

o o o

. . . Drought peril and labor difficulties are only depressing factors.

CHICAGO, June 30. — Ingot output is off two points to 72 per cent of capacity which is not a reflection of less pressure on the part of consumers, but rather a fluctuation which is brought about by the manner in which some Bessemer units are being used. In all major phases of the market shipments are sustained and in some directions deliveries are being pushed forward.

Wire mills have found themselves handicapped in the matter of promises and have stepped up output to 70 per cent of capacity. Cold-rolled strip mills are running full and some units cannot promise tin plate before September. Sheet delivery promises range from six to eight weeks and local mills are rushing additions to shipping departments in order to meet the situation in the heavy rolled products.

Some rail schedules have been extended as an accommodation to mills in meeting the July rush and books are weighted heavily with specified projects, which, along with the rail and car programs, will give material aid in ironing out a possible August dip in production.

Extension of working hours and added shifts in many shops, plus the constant search for skilled labor, add strength to the contention of producers that unless unforeseen factors develop the summer will prove to be unusually active and that a substantial production rate will be sustained to the time when new automobile models and farm implements will bring higher demand from those sources.

Only two factors now definitely cloud the outlook. One is the continued seriousness of drought and the other is the threat of labor difficulties in mill areas. Union organization is under way in this area.

Pig Iron

June shipments topped May by a substantial margin and new buying is on a broad base. It is estimated that not less than 80 per cent of contract buyers have made commitments for third quarter and a number of large inquiries are expected to be closed within the week. The melt is slightly off, the change being noticeable in that type of business characterized by extreme pressure for the earliest possible deliveries.

Plates

Pipe, tank and oil well casing tonnages are tending to swell plate mill books, which are also benefiting from railroad activity and which will gain some attractive tonnage from five dams and locks on the Mississippi and Illinois Rivers. A Chicago fabricator has shared in 11,000 tons of steel water pipe for Birmingham, and another local shop has taken 1100 tons of tanks for delivery to New Jersey. The Shell oil interests are expanding in Texas and the general contractor has awarded tank and other equipment fabrication to a Chicago plate shop. Some Chesapeake & Ohio car material has been released and the Milwaukee Road is assembling steel for its Milwaukee shop program. Railroad needs for new equipment now on order are shown by pressure for deliveries being put against contract shops. Local mills estimate that there are still about 5000 cars to be purchased on known projects.

Structural Material

Mississippi River Valley states are rushing into the highway bridge market in a fashion which leaves no doubt that many people will need employment during the summer and early fall. Also of interest to fabricators are announcements of two new dam projects bringing the total to five along the Mississippi and Illinois Rivers. Dam No. 12 at Bellevue, Iowa, will take 2100 tons of structural materials and locks and a dam near Beardstown, Ill., calls for 1000 tons, including 225 tons of forgings. The Burlington has placed a 125-ton bridge and the Santa Fe is taking bids on a 175-ton span. This market is without special feature in the private enterprise field.

Bars

The astonishing truth is that automobile plants, instead of using smaller quantities, are actually increasing specifications on the basis of new sales being larger than production. Another interesting development is that some areas are beginning to report shortages of used automobiles. Forgers are taking liberal quantities of bars and road machinery and tractor plants remain at capacity output. Farm implement manufacturers are slackening here and there to take inventory but they are accumulating steel for early resumption of heavy schedules. Bolt and nut manufacturers are taking their full share and several very attractive forging inquiries cover dam and lock work on the Mississippi River.

Rails

A few small secondary rail orders total 550 tons. Possibilities for additional new business lie in the direction of the Chesapeake & Ohio which will buy 15,000 tons of fastenings and may come in for secondary rails to the extent of 10,000 tons. The general run of accessory business is small and light rails are moving slowly.

Sheets

Automobile plants are putting on new pressure for deliveries and the miscellaneous trade is active. Deliveries average six weeks, and some mills cannot supply certain grades in less than eight weeks. New sales are not imposing, second quarter books having been closed on June 20. Third quarter offerings are not being taken in quantity.

Wire Products

Dreams of vacations in July by the wire trade are vanishing as summer business continues to break

all recent records. In fact, in one of the leading industrial centers of the country June business exceeded the sixth month in 1929. Practically all districts report that June was better than a year ago, by margins from 20 to 60 per cent, and on this basis wire production has been driven upward to an average of 70 per cent of capacity. The drought situation is serious in many sections of the country, yet for the nation as a whole jobbers are insistent on prompt deliveries and volume of distribution in country areas in June is without precedent.

Reinforcing Bars

Large work in prospect looms impressive with 2500 tons needed for flow control at the mouth of the Chicago River and a number of attractive tonnages for use along the Mississippi River. Current lettings of size include 800 tons for the Sanitary District, Des Plaines, Ill., 650 tons for Federal housing projects in Chicago and Milwaukee and some State highway work. Prices are in on the Wieboldt department store, Chicago, and contracts may be placed within the week. An encouraging sign is that small private jobs are more numerous.

Cast Iron Pipe

The week is dull which is no more than can be expected when the chief money spenders are gathered in Philadelphia and the Waterworks association is meeting on the West Coast. There is no current business of size before the trade and none in prospect but sellers expect a fairly good flow of small orders during the next four or five months when pipe laying can be carried on actively. Deliveries are prompt on all sizes and in almost any desired quantities.

Coke

Present quotations of $9 ovens, are being carried forward for deliveries to be made in July. June shipments exceeded May by about 15 per cent.

. . . CINCINNATI . . .

. . . Pig iron and finished steel demand unchanged.

o o o

. . . Warehouse prices advanced.

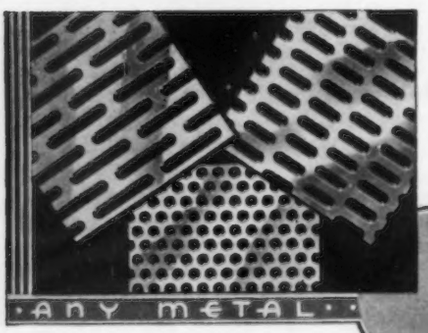
CINCINNATI, June 30.—While the pig iron market is without noticeable feature, ordering in small lots is unabated. Average weekly sales continue near the 1000-ton level and furnace interests report no indication of early changes. Consumers accept price schedules and pressure is absent since all furnaces are holding to published rates. Surcharge reductions on freights will not affect prices in this area since Hamilton, Ohio, is below the 25c. rate. Foundry operations average about 65 per cent, despite an easing in the machine tool melt. Valve, stove and automobile melters increased operations last week to offset the slack in tool business.

Activity in sheet steel is unabated. Current demand of plants in operation approaches full capacity output. Strikes, which have forced shut-downs in some plants, tend to shift a portion of business to other mills so that distribution of current bookings is concentrated. Stove, table top and refrigerator demand is most active, while automobile ordering reflects the usual model change tapering. Rolling schedules of district plants are being maintained at capacity with small backlogs.

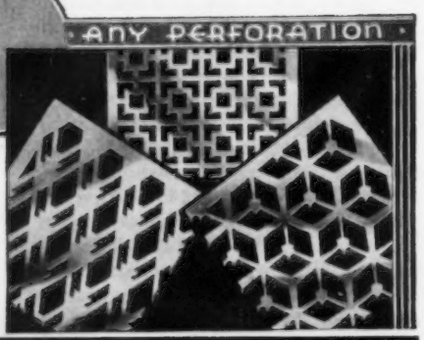
A new 73-in. cold-rolling mill is being tested by American Rolling Mill Co. A regular operation date is unannounced, depending on the nature and extent of demand in the next few weeks.

Shipments of foundry coke are fair, but show the influence of warm weather. Changes in freight surcharges will not affect by-product coke prices in this area, since ovens are operating under a water competition rate schedule.

Warehousemen have announced advances, effective July 1, to meet mill increases effective the same time. Some rush to cover was noticeable last week, and June business is expected to exceed May.



INDUSTRIAL AND ORNAMENTAL SCREENS



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. . CAST IRON PIPE . .

Board of Water Commissioners, Wilmington, Del., plans 8-in. in Faulk Road to point near Talleyville, for main water supply. Cost about $20,000.

Chester, N. Y., closes bids July 9 for 2400 ft. of 6 and 8-in. for water system; also for 500,000-gal. steel standpipe for water storage and other waterworks installation. R. R. Shearer, 91 North Pearl Street, Albany, N. Y., is consulting engineer.

Scottsville, Ky., plans about 23,060 ft. of 4 and 6-in. for water system, and other water works installation. Fund of $45,000 is being arranged through Federal aid.

Albemarle, N. C., plans pipe lines for water system and other waterworks installation. Cost about $81,000. Financing is being arranged through Federal aid.

Tabor City, N. C., plans pipe lines for water supply and other waterworks installation. Fund of about $100,000 is being arranged through Federal aid for this and sewage system.

Pecos, Tex., plans pipe lines for water system. Special election is being arranged to vote bonds for $20,000 for project.

Mingus, Tex., closes bids July 10 for pipe for water system and other waterworks installation. Cost about $52,000. Financing has been arranged through Federal aid. Hawley, Freese & Nichols, Capps Building, Fort Worth, Tex., are consulting engineers.

Kalamazoo, Mich., has authorized fund of $154,529 for pipe lines for water supply, including new lines and replacement of certain present mains with larger section pipe; also other waterworks installation. Part of fund will be secured through Federal aid.

Ortonville, Minn., N. J. Watkins, city clerk, asks bids until July 6 for about 1600 ft. of 6-in. for water system, including four gate valves.

Gering, Neb., plans pipe lines for water system in number of streets. Cost over $10,000. Financing is being arranged through Federal aid.

American States Water Service Co., 1206 Maple Avenue, Los Angeles, plans new 8-in. in part of Central Boulevard, Inglewood, Cal., for main water supply line.

Bellingham, Wash., plans about 2600 ft. View Park for water system. John Adams of 6-in. from Highland Avenue to Island is water superintendent. ... ...

Los Angeles has awarded 12,610 tons for Department of Water and Power as follows: 6700 tons to United States Pipe & Foundry Co., 3000 tons to American Cast Iron Pipe Co., 2000 tons to National Cast Iron Pipe Co., 450 tons to R. D. Wood & Co., 460 tons to Pacific States Cast Iron Pipe Co.

..SAN FRANCISCO..

... Nine major steel tonnages involved in pending projects on Pacific Coast.

o o o

... Bids to be taken Aug. 19 on floating drydock.

SAN FRANCISCO, June 30.—Nine major steel tonnages are involved in projects that were added to the pending list during the week. At Everett, Wash., a bond issue of $1,300,000 was favorably voted to finance the Lake Chaplain distribution system which will include 103,920 ft. of 48-in. and 20,710 ft. of 52-in. steel pipe. Bids are expected to be opened within 60 days.

The Metropolitan Water District will open bids at Los Angeles on July 30, for the upper feeder of the Colorado River aqueduct distribution system. If all precast alternates are accepted 3570 tons of steel cylinder reinforcement and 3515 tons of reinforcing bars will be needed. A combination of steel and precast alternates will require 3500 tons of plates, 1170 tons of reinforcing steel and 2050 tons of bars.

The Bureau of Reclamation will take bids July 23 on a contract on the All American Canal which specifies 1066 tons of bars and 300 tons of sheet piling. It is reported that August 19 has been set as the date for the opening of bids on the huge floating drydock which, it is estimated, will involve over 45,000 tons of steel.

Bethlehem Steel Co. has been awarded 18,900 tons of reinforcing bars by the United States Engineers, Los Angeles. The Metropolitan Water District has placed 13,000 tons of cast iron pipe with several makers.

The close of the first half of the year finds the Coast mills running at near full production, with only a brief recession anticipated.

Whether your requirements call for a special gear steel, fast cutting screw stock, precision shafting or an unusual bar section, you can depend upon B & L engineers to cooperate with you in working out an economical solution to your problem. To develop the proper Cold Finished Steel—either carbon or alloy grade—and determine the best method of heat treatment to fit that steel for your purpose, all this is a part of B & L service.

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. . . CLEVELAND . . .

. . . Heavy coverage of plates and shapes for identified structures is reported.

o o o

. . . Steel output maintained at 79 per cent level.

o o o

. . . Third quarter sheet prices are tested.

CLEVELAND, June 30. — An extension of time for taking orders for the heavy rolled steel products at the second quarter prices until the end of June was granted by leading producers and as a result commitments continued heavy the past week, the rush not subsiding until the mills definitely closed their books with the closing of their offices today. With the abandonment of an earlier deadline date mills have accumulated heavier backlogs than they would have had in case they had shut off taking business at the second quarter prices sooner and the time that the higher prices will generally apply has been extended.

With the heavy specifications for finished steel that assure good mill operations well through July, ingot output in the Cleveland-Lorain district is unchanged at 79 per cent of capacity this week, and the expectation that there might be considerable curtailment immediately after July 1 is not likely to be realized.

Bars, plates and structural shapes and semi-finished steel have furnished the bulk of the new business during the past few days. Demand for sheets subsided because most mills a week ago discontinued taking orders at the second quarter prices, having enough tonnage on their books to keep them busy well into July.

With the extensive forward buying not much steel shipped in July will carry the new prices except sheets for which quite a few orders have already been taken at the $2 advance that applies to the third quarter.

The outstanding activity of the week is the large number of protections taken for structural steel for identified construction projects. Little business came from the motor car manufacturers and it may be several weeks before they make up specifications for new models.

The Chesapeake & Ohio is inquiring for 20,000 tons of rails and for track accessories for laying these rails, supplementing its purchase of a like tonnage during the spring. The Wheeling & Lake Erie has divided 1000 hopper cars between two builders.

Bars, Plates and Shapes

A heavy tonnage of steel bars has been entered by producers which assures them good rolling schedules for two or three weeks. Forge shops, fabricators, agricultural implement manufacturers and miscellaneous consumers have ordered freely of such sizes as they can place in stock. The price advance to 2c., Cleveland, becomes effective tomorrow. Structural shapes and plates have also been greatly stimulated by the third quarter price advance. In the construction field there has been a last minute rush to secure protection for a large number of identified plant extensions and other projects. New projects include a factory building for the Cleveland Twist Drill Co., taking 500 tons, and a cracking plant for the Standard Oil Co. in Toledo, Ohio, requiring 500 tons or more.

Pig Iron

Some furnaces are still booking considerable business on third quarter contracts but sales by others are limited to spot shipment orders. A leading Lake furnace interest has sold more iron this month than in any month since last October when the price advance was announced and its June shipments are close to those in March when there was a heavy movement due to the cleaning up of the low-priced contracts. Some tonnage has been placed by automobile foundries for production on new models. Demand from foundries making steel and malleable iron for railroad cars is heavy. Specifications that have already come in assure good shipping schedules during the first half of July.

Sheets

With most mills out of the market business in sheets tapered considerably the past week. Producers' books were closed except for galvanized sheets in bundles and roofing material which mills carry in stock and for which they are accepting orders through June 30. Mills will get cleaned up on deliveries against outstanding orders from July 10 to 31, depending on the grade. Quite a few sales for the third quarter delivery have been made at the $2 a ton advance in prices, largely in galvanized, cold-rolled and enameling sheets.

Strip Steel

While some additional orders for hot-rolled strip came from automobile parts manufacturers, the spurt in the demand stimulated by the third quarter price advance subsided the past week and some producers were willing to accept orders at the old prices up to the end of June. Some have enough business to maintain the present production schedules for two to three weeks. Demand for cold-rolled strip is holding up fairly well and mills are comfortably filled with orders.

Iron Ore

Shipments this month have shown quite an increase over May and the June movement is estimated at over 6,000,000 tons as compared with 5,000,000 tons in the previous month.

Warehouse Business

No advance in warehouse prices on leading mill products will be made July 1 by Cleveland jobbers. However, prices may be marked up a little later to reflect the $2 a ton advance in mill prices. The only change announced is an advance on hot and cold-rolled alloy steel, this conforming to the advance in mill prices.

Bolts and Nuts

Business has been stimulated the past week by good specifications brought out by the 5 per cent price advance effective July 1. Rail-

roads, car builders and implement manufacturers have ordered freely and business has come in substantial volume from jobbers who are stocking up. The gain in business from these sources offsets the decline from the motor car industry. With this spurt June business was heavier than in May. Shipments fell slightly behind the previous month.

. . . Awards of 23,350 tons —15,500 tons in new projects.

AWARDS

Buffalo, 100 tons, municipal stadium, to Igoe Brothers, Newark, N. J.

State of Illinois, 200 tons, highway work, to Calumet Steel Co.

DesPlaines, Ill., 800 tons, Sanitary District work, to Concrete Steel Co.

Chicago, 110 tons, Acme Steel Co., to Bethlehem Steel Co.

Chicago, 500 tons, Federal housing projects, to Bethlehem Steel Co.

Milwaukee, 150 tons, Federal housing project, to Calumet Steel Co.

State of Wisconsin, 100 tons, road work, to Concrete Steel Co.

State of Indiana, 200 tons, highway bridge, to Concrete Steel Co.

State of Wisconsin, 100 tons, highway work to Concrete Steel Co.

St. Louis, 175 tons, Soldiers' memorial, to Laclede Steel Co.

Los Angeles, 18,900 tons for United States Engineers, Proposal No. 741, to Bethlehem Steel Co.

Denver, 2005 tons for Bureau of Reclamation; 1495 tons to Republic Steel Corp., 154 tons to Bethlehem Steel Co., 194 tons to Concrete Engineering Co., 162 tons to Colorado Fuel & Iron Co.

NEW REINFORCING BAR PROJECTS

Togus, Me., 200 tons, Government home unit.

New York, 2000 tons, warehouse, 11th Avenue and 27th Street.

New York, 1000 tons, West Side highway, 82nd to 94th Streets.

Mount Vernon, N. Y., 1000 tons, Fleetwood housing project.

Brooklyn, 1350 tons, Marine Parkway bridge and approaches; substructure, 750 tons, low bidder, Frederick Snare Corp.; superstructure, 600 tons, low bidder, American Bridge Co.

Buffalo, 300 tons, clearwater reservoir for city.

Port Jervis, N. Y., 500 tons, Erie Railroad grade crossing; C. B. Moon Co., Cleveland, contractor.

Stark County, Ohio, 200 tons, grade crossing elimination.

Bellevue, Iowa, 520 tons, dam across Mississippi River.

Beardstown, Ill., 440 tons, dam and locks on Illinois River.

Chicago, 2500 tons, flow control at mouth of Chicago River.

Clarkville, Mo., 350 tons, lock No. 24 in Mississippi River; Central Engineering Co., Davenport, Iowa, low bidder on general contract.

Fort Smith, Ark., 225 tons, post office and court house; bids June 30.

St. Louis, 500 tons, Kingshighway viaduct; Chase Construction Co., St. Louis, low bidder on general contract.

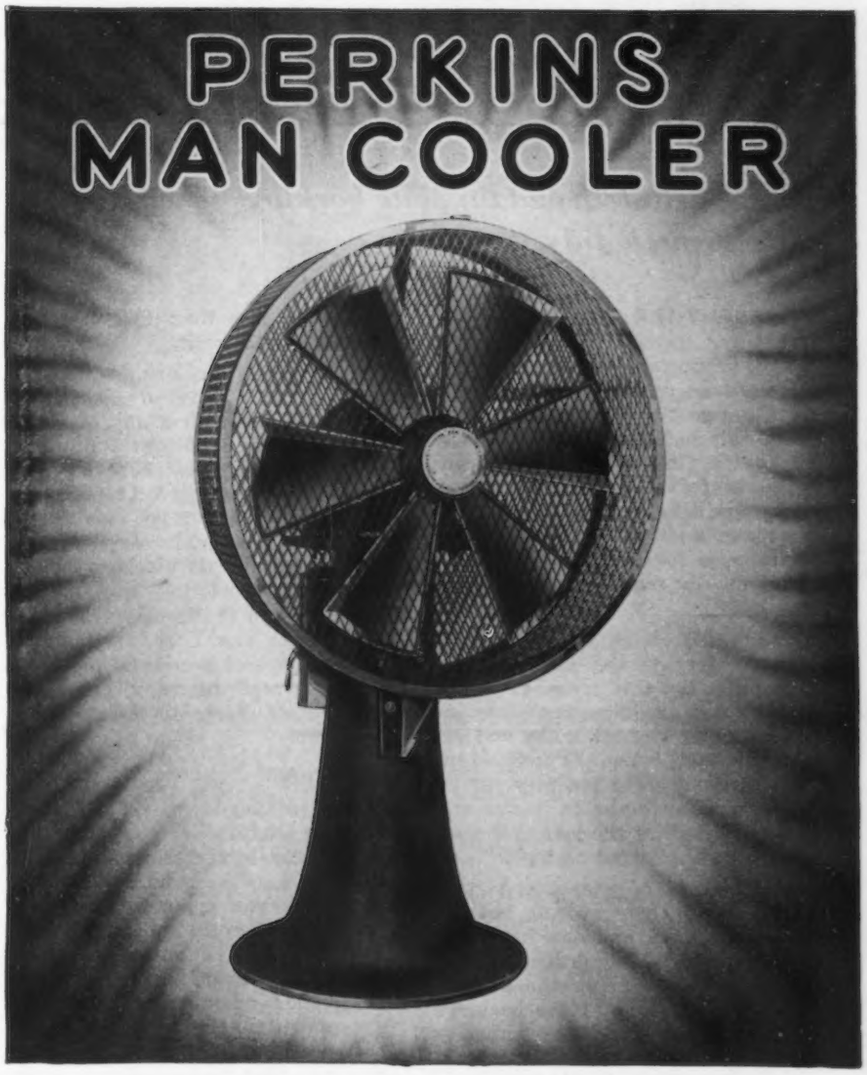
St. Louis, 230 tons, Wabash Railway grade separation; Fred Schmitt Contracting Co., St. Louis, low bidder on general contract.

Yuma, Ariz., 1066 tons, overchutes, inlets and turnouts on All American Canal; bids July 23.

Los Angeles, 1170 or 3570 tons steel cylinder reinforcement and 3515 tons bars for upper feeder of Colorado River aqueduct distribution system; bids July 30.

San Francisco, 400 tons, East Bay terminal building on Transbay bridge.

Sacramento, Cal., 450 tons, high school; bids opened.



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B. F. PERKINS & SON, Inc., HOLYOKE, MASS.
ENGINEERS AND MANUFACTURERS

. . . . NEW YORK. . . .

. . . Last-minute coverage on heavy products congests local sales offices.

o o o

. . . Plate purchases for oil refinery work bulk large.

o o o

. . . Sheet, strip and tin plate backlogs schedule mills through July

NEW YORK, June 30.—Orders for heavy hot-rolled steel products, on which $2 a ton price advances are effective tomorrow, were still being accepted by local sales offices today. In view of the fact that most of this tonnage is for identified structures, buyers will have 30 days in which to make known their definite requirements for such work and shipment may be made over the life of the job.

While fabricated structural steel and reinforcing bar tonnage predominates in this class of work, heavy plate requirements are involved in oil storage tanks and refinery rehabilitation. The Shell interests alone have recently placed 9000 tons for tanks in Texas and practically all of the large oil companies have ordered material.

All makers of sheets and strip steel closed their second quarter books last week and now have sufficient material on order to keep them occupied during the greater part of July. Tin plate backlogs are even larger and near-capacity operations are promised for four to six weeks. Tin mill black plate is even more difficult to secure as mills are not anxious to divert tonnage to this outlet which might otherwise be tinned. Mills have not yet taken action on the sale of stock tin plate as a result of the recent Federal Trade Commission consent decree.

The New York Central opened bids last week on its second half rail and track accessory requirements and is expected to buy 5200 tons of rails and the required amount of accessories. This is somewhat less than had been expected in the trade.

The American Bridge Co. has booked 8000 tons of fabricated structural steel for a unit of Rockefeller Center, 500 tons for an extension to the West Side elevated highway from 111th to 121st Street, Manhattan, and 1100 tons for a recreation center in Jersey City. This fabricator is also low bidder on 12,000 tons for the Marine Parkway job in Brooklyn. Porrier & McLane, New York, are low bidders on another section of the West Side elevated highway extending from 82nd to 94th Streets, involving 5000 tons.

Pig Iron

New tonnages placed for third quarter delivery are not heavy, but business is better than during the early part of the month. The melt in this district appears to be holding at between 40 and 50 per cent of capacity. The average jobber foundry, however, has not proved a very good customer as yet, and sellers explain this tendency to buy only as quantities are needed on the basis that no incentive to make forward commitments exists. Inquiry is reported still open on 1500 tons of foundry and malleable irons, while A. P. Smith Co. at Bloomfield, N. J., is rumored to be about to release a written inquiry for from 200 to 400 tons. The new surcharge freight rates which were applied July 1 will have no effect upon delivered prices of pig iron, but will reduce the cost of coke to consumers by about 5c. a ton. In pig iron the former rate of 7 per cent, but not to exceed 44-8/10c. a ton, has been reduced to 25c. Basing point-to-customer distances in this territory, however, are so restricted as not to warrant the application of maximum surcharge. In the case of a distant furnace shipping into the local area, furnace realization may conceivably be enlarged by a few cents a ton, but delivered prices will remain. In regard to coke the old surcharge was based on a flat rate of 15c. a ton, now reduced to 10c. Consumers, in this instance, will obtain the benefit of the reduction.

Reinforcing Steel

With inquiries amounting to over 6000 tons before it, the reinforcing bar market faces its brightest week in months. No large tonnages were reported awarded this week, but with prices becoming firmer and heavy pending work, the market is placed in a technically stronger position notwithstanding. A warehouse in New York is expected to require about 2000 tons of bars and the Fleetwood housing project in Mount Vernon, N. Y., will take 1000 tons. The West Side highway from 82nd to 94th Streets will probably require over 1000 tons and a bridge and approaches for the Marine Parkway in Brooklyn will use 750 tons. Frederick Snare Corp., New York, is low bidder on the substructure of this latter project, and American Bridge Co. on the superstructure, which will require an additional 600 tons of bars. The New York department of the Procurement Division of the Treasury will open bids on various days of this week on varied lots amounting to about 500 tons. Sellers are generally of the opinion that prices already are reacting to the public announcement and are strengthening.

. . . BOSTON. . .

. . . Flood rehabilitation work active in New England.

o o o

. . . Structural steel market busy.

BOSTON, June 30.—New England is holding its own industrially or slowly forging ahead. Where improvement is noted is mostly in allied steel and electrical lines. Production of steel products at the moment is larger than in some years, but not appreciably greater than a week ago. Part of the im-

provement reported in allied steel lines, however, is due to rehabilitation following spring floods. A particularly bright spot is the Gilbert & Barker Mfg. Co., Springfield, Mass., where employment has just been increased and stands at 1138, as against 914 a year ago.

Pig iron buying is confined almost exclusively to small lots with a comparatively small aggregate. Foundry production, however, is on the mend, with indications of further expansion reaching a 1936 peak in the fall months.

In structural steel, bridges dominate the market, but in June an encouraging private construction tonnage was sold. Buying of cast iron pipe continues in small lots with the weekly turnover fairly satisfactory. On recent round tonnage lettings there was some shading of prices, but the market generally is holding.

. . . GERMANY . . .

. . . Motor car industry booming.

o o o

. . . Scrap imports under control.

HAMBURG, June 22 (*by Special Correspondence*).—The International Tin Plate Cartel has been renewed, but the German Hoesch-Neuseesen works is not participating. The German allotment of 18 per cent is, therefore, not corresponding to actual German export figures. The Hoesch works, which has a rather important capacity, will not cut prices, but has agreed to sell at the same prices as the cartel.

The German industrial commission which toured Manchukuo and signed an agreement with that country has had various meetings with Japanese steel industrialists, though it is not anticipated much will result from these sessions at the moment.

According to the latest report of the Federation of Machinery Manufacturers, demand continues to improve. The industry operated in March at 72.7 per cent of capacity, in April at 74 and in May at 74.6. The machine tool industry is particularly busy, and many works are operating up to the limit of capacity.

The boom in the motor car market persists. Registration of new cars during the first five months of this year was 26 per cent better than last year for passenger cars and 38 per cent better for trucks and commercial vehicles.

Export figures have trebled compared with last year, easily establishing a new record. The total of cars and trucks was 10,494 units for the first four months of 1936, against 5709 comparably last year. Also, 3739 motor bicycles were exported, compared with 1316 last year. Imports come chiefly from Italy, which is assembling in Germany and exporting to such countries as prohibit direct importation under sanctions.

Rebuying of capital shares outstanding continues, and reduction in the industry's capitalization is increasing. Extraordinary firmness of all shares on the exchanges is due to a considerable extent to influx of Dutch and French capital fearing devaluation of the florin and franc.

The German steel industry has been able to regulate the domestic steel scrap supply. Due to industry and government measures, the scrap supply from domestic sources has increased in such a way that, in spite of increased consumption, imports have recently averaged only 30,000 tons monthly, compared with 50,000 to 60,000 tons in 1933, for instance. Exports are running 6000 to 8000 tons monthly, chiefly to Poland and Italy. Prices have been steady.

Unfilled orders for vessels at shipyards at the end of May totaled 635,000 British round tons, compared with 398,200 tons in the same period last year and 158,300 tons two years ago. About 52 per cent of all orders have been for foreign account. The navy building program is not included.

Although the general trend in the iron and steel export market is quieter than a month ago, the industry continues to book orders, securing a combined iron and steel export trade of approximately 300,000 tons monthly. Demand embraces sheets, tubes, hoops and bright steel products, as well as all other quality steel products. Barter business is again showing an increased percentage of total business volume.

Eastern Rolling Mill Strike Settled

THE Eastern Rolling Mill Co., Baltimore, announced last week that amicable adjustment of labor difficulties had been made. Work was resumed June 25 in all departments. The company will continue to meet with representatives of all groups of its employees without exception for any future discussions involving working conditions.

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. . PHILADELPHIA . .

. . . Philadelphia rate advances two points to 48 per cent.

o o o

. . . Low-price orders rushed in as deadline approaches.

o o o

. . . Unionization activities not apparent in this area.

PHILADELPHIA, June 30.—District steel sellers have enjoyed a better volume of forward buying during the past seven days than was popularly anticipated. Of even greater importance is the fact that a sizable proportion of this buying cannot be classed as speculative, for in many cases users are urging delivery at mill's earliest possible convenience, thus indicating that this steel will steadily go into production and not into stock piles.

Normal delivery from Pittsburgh mills for current orders of light flat-rolled products is now about five to seven weeks; many specialties, however, are booked ahead for two months. Mills in this immediate territory, mostly makers of plate and hot-rolled sheets, will work at present rates for at least three weeks to take care of current backlogs. Several additional furnaces have been lighted and the district steel making rate has advanced two points to 48 per cent of capacity.

Regarding current selling policies, it should be pointed out that most sellers were not too reluctant to take care of regular customers even late today at second-quarter price levels. Nevertheless all sellers insist that tomorrow is another day and no amount of cajoling will make them ignore third quarter advances. Inasmuch as rolling schedules are in a good shape, it is unlikely that any buyer will be able to undermine this price position, at least in the near future.

Resale prices for wrought iron pipe are none too steady as a leading producer has just advised jobbers that suggested minimum resale prices heretofore placed in their hands have been withdrawn; no indication is given as to when the practice will be resumed. Fabricating prices have shown a perceptible improvement over the past six weeks, and also, reinforcing awards are being received at better figures.

Baldwin Locomotive Works has just booked 12 passenger locomotives from the Southern Pacific Railroad. Releases for the steel required will probably not appear for at least six weeks.

Pig Iron

Aggregate June shipments have been on a par with those for May, and most furnace representatives look for no decline in deliveries during July. Most foundries continue to purchase sparingly, and most orders are wanted immediately. This latter tendency is an encouraging sign for it indicates that iron is going immediately into consumption. Thus there should be no sharp decline in new orders over the next several months as consumers will have no stocks on which to fall back upon. On the other hand, it is possible that third quarter business might expand considerably if buyers become convinced that furnaces are seriously considering price advances.

Sheets

Warehouses and miscellaneous consuming outlets have come into the market strongly during the past week for additional tonnages at second quarter price levels. Whereas some of these bookings are known to be speculative in nature, most of the steel is scheduled for earliest possible shipment, and by the same token, early conversion into consumer products. Autobody stamping plants have yet made no public plans for fall requirements. However, tentative specifications for certain new models are out, and actual purchases may be announced within the next three or four weeks. It would seem likely that some of this tonnage is already tentatively covered at current quotations for early August delivery.

Plates and Shapes

Business is still being taken at old price levels, but sellers insist that the $2 advance will apply to all orders received after today. Central Iron & Steel Co. is low bidder on 2000 tons of Navy tonnage, but actual awards have not been made. Also, no action has been taken yet on 1100 tons of stock plates, on which bids were entered June 26. Shipyards have not bought to any extent during the week. The shapes market is modestly active, with awards during the week totaling 1050 tons. Several large projects are pending, and a good volume of small-tonnage industrial work is coming up for estimation.

Imports

The following iron and steel imports were received here last week: 1250 tons of pig iron from British India; 1500 tons of pig iron from England; 500 tons of ferromanganese from the Netherlands; 444 tons of steel sheets from Germany; 395 tons of ferromanganese from France; 91 tons of structural shapes and 5 tons of steel hoops from Belgium; 17 tons of steel tubes and 13 tons of charcoal bar iron from Sweden, and 4 tons of ferromanganese from Japan.

. . . . BUFFALO . . . .

. . . Steel production scheduled to rise.

o o o

. . . Pig iron business steady.

BUFFALO, June 30.—Republic Steel Corp. is operating seven furnaces but there is a possibility this pace will be increased to eight this week. Bethlehem's Lackawanna plant continues to operate 22 out of 24 furnaces and Wickwire-Spencer, two.

The pig iron business is steady with four furnaces blowing at Bethlehem; three at Hanna Fur-

nace Corp., two at Republic and one at Tonawanda Iron Corp.

A Buffalo concern will fabricate 100 tons of steel for an Erie County highway bridge at Pendleton, N. Y. Award of 100 tons of reinforcing bars for the Buffalo stadium was made to a Newark maker. Three hundred tons of reinforcing bars will be required for a clear water reservoir for the Buffalo waterworks system. This contract has not been awarded.

. . BIRMINGHAM . .

. . . Large freight car order placed.

o o o

. . . Pipe buying features market.

BIRMINGHAM, June 30.—An order for 500 box cars, placed by the Southern Pacific Railroad, was announced last week for the Bessemer, Ala., plant of the Pullman-Standard Car Mfg. Co. This plant, closed since last October, resumed production last week on 100 phosphate cars for the Seaboard Air Line.

Birmingham fabricators are looking forward to July 7 when bids will be opened on 10,000 tons of 60-in. steel pipe for Birmingham's industrial water project.

Three Birmingham pressure pipe producers were low bidders on approximately 8000 tons of pipe at Los Angeles, which is to be delivered over a period of six to eight months. The low bidders were American Cast Iron Pipe Co., National Cast Iron Pipe Co. and United States Pipe & Foundry Co.

Atlanta, Birmingham & Coast Railroad has renewed its coal contract with the Woodward Iron Co. It calls for approximately 150,000 tons. Seaboard Air Line has also renewed coal contracts with Alabama By-Products, National Coal & Coke Co. and Alabama Fuel & Iron Co. for more than 300,000 tons.

The Ensley rail mill was shut down June 24, for an indefinite period. No. 5 Ensley blast furnace was also blown out last week and two Fairfield open-hearths were closed down. It is also expected that another Ensley blast furnace will be blown out this week. The blast furnace total at present is 11 and the open-hearth total is 13.

The market for bars, plates and shapes continues active and bookings have been heavy. Roofing sheets are weak, but other types of sheets are moving at a fair rate and more than offset the poor demand for roofing. Dealer and jobber business in the dry sections is sluggish. They hesitate to build up stocks for fall demand, as the drought may seriously affect fall consumer buying.

Pig iron buying is on a routine basis. Only a part of the trade has placed third quarter contracts and it is likely that many foundries, for the time being, will buy iron only as needed. However, contract tonnage at the beginning of the third quarter is larger than it was at the beginning of the second quarter.

. . . . ST. LOUIS . . . .

. . . St. Louis Southwestern to buy rails and automobile cars.

o o o

. . . Pig iron melt well sustained.

ST. LOUIS, June 30.—The St. Louis-Southwestern has been authorized by Federal Court here to buy 25 miles of 112-lb. rails to

DURIRON PRODUCTS

"Ask the Man Who Uses Them"

(Apologies to The Packard Motor Car Co.)

That is sort of a "natural," isn't it? Especially since Packard uses Duriron Products in their plant—and likes them.

The pumps shown here are used on a 30" 24-chamber filter press. One pump is used for pumping from storage and from the plating tank, discharging into the filter inlet. The other pump is hooked onto the filter outlet and pumps through the Duriron Heat Exchanger into the plating tank. They're doing a sweet job, too.

Duriron pumps handling plating solution through Duriron Heat Exchanger at Packard Motor Car plant.

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cost $217,752, 50 steel automobile cars to cost $195,000, and to apply steel to the sides of box cars at a cost of $140,000. It was denied without prejudice the request to buy five new locomotives for $575,000 and five air-conditioned coaches for $225,000.

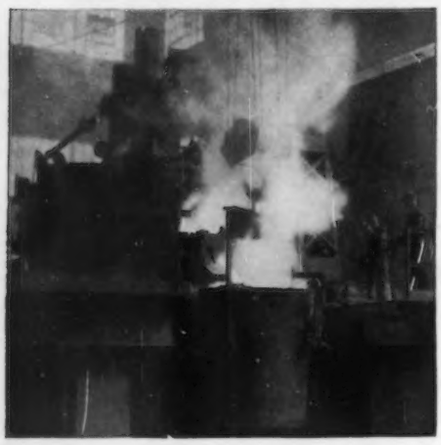
Mount Vernon Bridge Co. was the low bidder on the superstructure of a highway bridge across the Ohio River at Cairo, Ill., requiring 7000 tons of structural steel. Central Engineering Co. Davenport, Iowa, was low bidder on a dam at Clarkville, Mo., requiring 1000 tons of structurals and 350 tons of reinforcing bars. Chase Construction Co., St. Louis, was low bidder on the King's Highway viaduct, involving 550 tons of structural steel and 500 tons of reinforcing bars, and Fred Schmitt Contracting Co. was low on a Wabash grade separation project in St. Louis, requiring 230 tons of reinforcing bars. Bids are due June 30 for a post office and court house at Fort Smith, Ark., with 225 tons of reinforcing bars. Laclede Steel Co. has been awarded 175 tons of reinforcing bars for a Soldiers' Memorial in St. Louis.

The Federal Reserve Bank of St. Louis reports that releases by the automotive industry in this district have receded slightly since June 1, but that this recession has been more than offset by structural, railroad, agricultural and miscellaneous specifications.

The melt of pig iron in the St. Louis territory continues a high rate. While there has been a decline in the melt of interests producing agricultural implements, this is believed to be offset by increases in other lines, notably the tractor industry, which is operating day and night at full speed. The activity in this line is said to be due to the heavy demand for tractors in the road-making field. Shipments from the makers are holding up well. Most of the business is in spot orders to meet immediate needs, and there seems to be no rush at present to cover for third quarter requirements.

BASIC ELECTRIC STEEL

FORGINGS



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NATIONAL FORGE AND ORDNANCE COMPANY

IRVINE, WARREN COUNTY, PENNA.

RAILROAD BUYING

American Car & Foundry Motors Co. has received orders for seven 28-passenger intercity motor coaches. Six are for the Santa Fe Trails of Illinois, Inc., Chicago, and one is for the Southern Kansas Stage Lines Co., Wichita, Kan.

Southern Pacific has ordered six streamlined passenger locomotives from Lima Locomotive Works, and 12 freight locomotives from Baldwin Locomotive Works.

Central of Georgia has ordered 200 steel coal cars from Pullman-Standard Car Mfg. Co.

St. Louis-Southwestern has been authorized to buy 50 steel automobile cars and to apply steel to sides of box cars.

Wheeling & Lake Erie has placed 500 60-ton hopper cars each with Ralston Steel Car Co., and Pullman Standard Car Mfg. Co.

RAILS AND TRACK SUPPLIES

Chesapeake & Ohio is inquiring for 20,000 tons of rails.

St. Louis-Southwestern has been authorized to buy 25 miles of 112-lb. rails.

...OBITUARY...

T. CEDAR RALEIGH, formerly superintendent of the Cleveland rod mill of the American Steel & Wire Co., died June 24, aged 68 years. He retired on a pension in 1933 after serving the United States Steel Corp. for 52 years. Born in Cleveland, Mr. Raleigh began working at the age of 11 in the Chisholm Steel Works, now the Newburgh Steel Works. He was employed in plants in the Pittsburgh district from 1885 to 1905, when he returned to Cleveland to take the roll mill superintendency.

❖ ❖ ❖

CHARLES S. POWERS, sales manager at Tulsa, Okla., for Republic Steel Corp., died at his home in that city on June 19, aged 53 years.

❖ ❖ ❖

WILLIAM FAWCETT OSBORN, chairman of Samuel Osborn & Co., one of the leading Sheffield steel companies, died at Sheffield on June 16, aged 75.

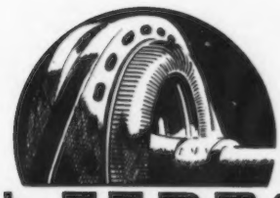
Mr. Osborn had been Master Cutler at Sheffield, and was the son of the late ALDERMAN SAMUEL OSBORN, founder of the company. Recently Mr. Osborn, with his brothers and sisters, gave Clarke House, a well-known Sheffield mansion, to the King Edward VII School, Sheffield, to be used as a new junior school.

❖ ❖ ❖

BERTRUM GRAY, president of the Sturdy Mfg. Co., Sturgis, Mich., died on June 25 in Milwaukee, after an illness of two years. He was 67 years of age and a native of Canada, going to Milwaukee in 1898 to establish a branch of the Liquid Carbonic Gas Co., and remaining 15 years. Since that time he was an executive of automotive equipment concerns in Elkart, Ind., and Sturgis.

❖ ❖ ❖

JOHN F. SAMPLES, sales engineer in the New York office of the Carnegie-Illinois Steel Corp., died suddenly on June 29, aged 40 years. He was a graduate of the University of Tennessee and was formerly identified with the Truscon Steel Co.



. . .NON-FERROUS. . .

. . . Tin quotas raised to 90 per cent; domestic June deliveries heavy.

o o o

. . . Lead sales spurt as July becomes popular.

o o o

. . . Demand for copper and zinc quiet.

NEW YORK, June 30.—Domestic copper purchases are still limited by reason of the very large tonnage placed under contract in April. Yesterday's sales were 768 tons, and brought the running total to 15,316 tons. Addition of today's orders will probably raise the June total to about 16,000 tons. Present laxity in new business is not disturbing sellers, as large shipments indicate that consumption is holding up to the encouraging May level. Export demand is somewhat less than moderate, with electrolytic sales being made at 9.12½c. a lb., Continental base ports. The domestic price is steady at 9.50c., Connecticut Valley.

The Week's Prices. Cents Per Pound for Early Delivery

	June 24	June 25	June 26	June 27	June 29	June 30
Electrolytic copper, Conn.*	9.50	9.50	9.50	9.50	9.50	9.50
Lake copper, N. Y.	9.62½	9.62½	9.62½	9.62½	9.62½	9.62½
Straits tin, Spot, New York	42.75	41.62½	40.50	....	40.62½	41.00
Zinc, East St. Louis	4.85	4.85	4.85	4.85	4.85	4.85
Zinc, New York†	5.22½	5.22½	5.22½	5.22½	5.22½	5.22½
Lead, St. Louis	4.45	4.45	4.45	4.45	4.45	4.45
Lead, New York	4.60	4.60	4.60	4.60	4.60	4.60

*Delivered Connecticut Valley; price ¼c. lower delivered in New York.
†Includes emergency freight charge.

Aluminum, virgin 99 per cent plus, 19.00c.-21.00c. a lb., delivered.
Aluminum, No. 12 remelt No. 2 standard, in carloads, 17.00c. lb., delivered.
Nickel, electrolytic, 35c. to 36c. a lb. base refinery, in lots of 2 tons or more.
Antimony, Asiatic, 13.00c. a lb., New York.
Quicksilver, $74.00 to $75.00 per flask of 76 lb.
Brass ingots, commercial 85-5-5-5, 9.25c. a lb., delivered; in Middle West ¼c. a lb. is added on orders for less than 40,000 lb.

From New York Warehouse

Delivered Prices, Base per Lb.

Tin, Straits pig	42.50c. to 43.50c.
Tin, bar	44.50c. to 45.50c.
Copper, Lake	10.25c. to 11.25c.
Copper, electrolytic	10.25c. to 11.25c.
Copper, castings	10.00c. to 11.00c.
*Copper sheets, hot-rolled	17.00c.
*High brass sheets	15.12½c.
*Seamless brass tubes	17.37½c.
*Seamless copper tubes	17.50c.
*Brass rods	13.12½c.
Zinc, slabs	5.75c. to 6.75c.
Zinc, sheets (No. 9), casks, 1200 lb. and over	10.25c.
Lead, American pig	5.10c. to 6.10c.
Lead, bar	6.10c. to 7.10c.
Lead, Sheets, cut	8.25c.
Antimony, Asiatic	14.00c. to 15.00c.
Alum., virgin, 99 per cent plus	23.30c.
Alum., No. 1 for remelting, 98 to 99 per cent	18.50c. to 20.00c.
Solder, ½ and ½	28.50c. to 29.50c.
Babbitt metal, commercial grades	25.00c. to 60.00c.

*These prices are also for delivery from Chicago and Cleveland warehouses.

From Cleveland Warehouse

Delivered Prices Per Lb.

Tin, Straits pig	44.75c.
Tin, bar	46.75c.
Copper, Lake	10.25c. to 10.50c.
Copper, electrolytic	10.25c. to 10.50c.
Copper, castings	10.00c. to 10.25c.
Zinc, slabs	6.50c. to 6.75c.
Lead, American pig	5.20c. to 6.50c.
Lead, bar	8.50c.
Antimony, Asiatic	15.00c.
Babbitt metal, medium grade	19.00c.
Babbitt metal, high grade	48.75c.
Solder, ½ and ½	25.25c.

Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	7.37½c.	8.12½c.
Copper, hvy. and wire	7.25	7.75c.
Copper, light and bottoms	6.25c.	6.75c.
Brass, heavy	4.12½c.	4.75c.
Brass, light	3.37½c.	4.12½c.
Hvy. machine composition	6.12½c.	6.62½c.
No. 1 yel. brass turnings	5.12½c.	5.62½c.
No. 1 red brass or compos. turnings	5.75c.	6.25c.
Lead, heavy	3.62½c.	4.00c.
Sheet aluminum	12.75c.	14.25c.
Zinc	2.50c.	2.87½c.
Cast aluminum	12.12½c.	13.25c.

Lead

Demand during the week doubled its preceding volume, as customers began covering against July. The month is now estimated at be 30 per cent sold. Practically all users were in the market, though pigment and battery interests dominated. Bonus money is thought to be a factor in helping the latter types of activity. Although order books for August were opened this morning, no interest in contracts was shown.

Zinc

About 3015 tons of Prime Western was sold last week, and shipments came to 3768 tons. The market accordingly is quiet at the new price level of 4.85c. a lb., East St. Louis. Very low foreign quotations are still a disturbing factor, though no further easiness has developed here.

Tin

On June 25, the International Committee, unable to persuade Bolivia to consent to distribution of her unproduced allotment, raised all quotas 5 points to 90 per cent. Coupled with restriction uncertainties, this caused London prices to break sharply. The low was reached Friday when spot touched £176 10s. Reaction followed in the home market, and the scare dried up inquiry. Quotations receded to 40.50c. on Friday. A slight countertendency has developed this week, however, on the strength of heavy domestic deliveries in June. The total was 7795 tons. Spot Straits metal at New York is therefore quotable today at a ½c. gain, or 41.00c. a lb. Futures sell for approximately ¾c. lower. First session London prices today were £178 15s. spot, and £175 15s. futures. The Eastern price was £177 15s.

Non-Ferrous Averages

The average prices for major non-ferrous metals for June based on daily quotations in THE IRON AGE, are as follows:

	Average
Electrolytic copper, Conn.‡	9.500c. a lb.
Lake copper, Eastern delivery	9.625c. a lb.
Straits tin, spot, N. Y.	42.238c. a lb.
Zinc, East St. Louis	4.883c. a lb.
Zinc, New York	5.258c. a lb.
Lead, St. Louis	4.450c. a lb.
Lead, New York	4.600c. a lb.

‡Price ¼c. lower in New York.

FABRICATED STEEL

. . . Awards in large volume at 36,815 tons as against 16,140 tons last week.

o o o

. . . New projects increase to 38,700 tons from 30,500 tons in the previous week.

o o o

. . . Plate lettings total 1640 tons.

NORTH ATLANTIC STATES

Boston, 200 tons, Eastern Massachusetts Street Railway bus terminal, to New England Structural Co., Everett, Mass.

South Londonderry, Vt., 140 tons, bridge, to American Bridge Co.

Old Greenwich, Conn., 200 tons, Electrolux factory addition, to Ingalls Iron Works Co., Birmingham, Ala.

East Hartford, Conn., 115 tons, fertilizer plant, to Berlin Construction Co., Inc., Berlin, Conn.

Broome County, N. Y., 413 tons, State highway bridge, to American Bridge Co.

Washington County, N. Y., 135 tons, State highway bridge, to American Bridge Co.

Pendleton, N. Y., 125 tons, Erie County bridge, to Buffalo Structural Steel Co., Buffalo.

New York, 4550 tons, West Side highway, New York Central Railroad, 111th to 121st Streets, to American Bridge Co.

New York, 610 tons, ventilation building, midtown Hudson tunnel, to Harris Structural Steel Co., Plainfield, N. J.

New York, 8000 tons, building in Rockefeller Center, to American Bridge Co.

Jackson Heights, New York, 160 tons, school, to Belmont Iron Works, Eddystone, Pa.

Niagara Falls, N. Y., 430 tons, sewage disposal plant, to Belmont Iron Works.

Shenango Forks, N. Y., 110 tons, State highway bridge, to American Bridge Co.

Syracuse, N. Y., 610 tons, State highway bridge, to American Bridge Co.

Hightstown, N. J., 300 tons, grade elimination, to Bethlehem Steel Co.

Mercer, N. J., 220 tons, highway bridge, to Bethlehem Steel Co.

Carneys Point, N. J., 140 tons, storehouse for duPont company, to Morris Wheeler & Co., Philadelphia.

Pittsburgh, 425 tons, Pennsylvania Railroad bridges, to Bethlehem Steel Co.

Washington, 165 tons, lookout towers, Department of Agriculture, to Aermotor Co., Chicago.

SOUTH AND SOUTHWEST

Richmond, Va., 130 tons, bridge, to Richmond Structural Steel Co.

Albany, Ga., 610 tons, Cudahy Packing Co. building, to Virginia Bridge Co., Roanoke, Va.

Texas City, Tex., 195 tons, auxiliary furnace, to Jones & Laughlin Steel Corp.

Williamson County, Tex., 125 tons, underpass, to Mosher Steel Co., Dallas, Tex.

Bee County, Tex., 130 tons, bridge, to Alamo Iron Works.

Bexar County, Tex., 400 tons, bridge, to Mosher Steel Co.

Bexar County, 280 tons, underpass, to Virginia Bridge Co.

Potter County, Tex., 625 tons, underpass, to Mosher Steel Co.

DeWitt County, Tex., 360 tons, underpass, to Mosher Steel Co.

Lawrence County, Ark., 540 tons, bridge, to Wisconsin Bridge & Iron Co., North Milwaukee.

CENTRAL STATES

Gary, Ind., 200 tons, bridge, to American Bridge Co.

Mahoning County, Ohio, 195 tons, State highway bridge, to Truscon Steel Co.

Kent, Ohio, 260 tons, State highway bridge, to Bethlehem Steel Co.

Marysville, Mich., 1500 tons, assembly building, Chrysler Corp., to R. C. Mahon Co., Detroit.

Ishpeming, Mich., 200 tons, two bridges, to Fort Pitt Bridge Works Co., Pittsburgh.

Flint, Mich., 270 tons, extension to building, to R. C. Mahon Co.

Battle Creek, Mich., 335 tons, boiler house extension, to International Bridge Co.

Kalamazoo, Mich., 145 tons, alterations and addition to building, to Kalamazoo Foundry & Machine Co.

Streator, Ill., 1075 tons, additions, Owen-Illinois Glass Co., to Pittsburgh Bridge & Iron Co., Rochester, Pa.

Cook County, Ill., 185 tons, bridge, to R. C. Mahon Co.

Cook County, 145 tons, bridge, to Lakeside Bridge & Steel Co., Milwaukee.

Hancock County, Ill., 320 tons, bridge, to Clinton Bridge Works, Clinton, Iowa.

Cairo, Ill., 7050 tons, Ohio River bridge, to Mount Vernon Bridge Co., Mount Vernon, Ohio.

Waterloo, Iowa, 505 tons, hippodrome, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

Blackhawk County, Iowa, 1260 tons, I-beam spans, to Pittsburgh-Des Moines Steel Co.

Cass County, Iowa, 150 tons, beam span, to Des Moines Steel Co., Des Moines, Iowa.

Dallas County, Iowa, 140 tons, I-beam span, to Pittsburgh-Des Moines Steel Co.

Janesville, Wis., 475 tons, assembly plant addition, Chevrolet Motor Co., to Wisconsin Bridge & Iron Co.

Burlington Railroad, 125 tons, bridge, to American Bridge Co.

WESTERN STATES

Cody, Wyo., 400 tons, bridge, to Wisconsin Bridge & Iron Co.

Denver, 125 tons, deck-plate girders, to Milwaukee Bridge Co.

Denver, 440 tons, siphons on city water system, to Thompson Mfg. Co.

Hanning, Cal., 120 tons, tunnel ribs, to Commercial Shearing & Stamping Co., Youngstown, Ohio.

San Francisco, 140 tons, Golden Gate bridge lighting standards, to Bethlehem Steel Co.

Sausalito, Cal., 400 tons, tunnel supports, to Western Pipe & Steel Co.

Snelling, Cal., 200 tons, gold dredge superstructure, to Bethlehem Steel Co.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

Alna-Bucksport, Me., 109 tons, two State bridges.

Massena, N. Y., 575 tons, building for Aluminum Co. of America.

Little Ferry Junction, N. J., 640 tons, bridge for Erie Railroad.

State of Pennsylvania, 780 tons, six highway bridges.

Philadelphia, 9000 tons, manufacturing building for duPont company.

Wilkes-Barre, Pa., 300 tons, grade school; bids in.

Springdale, Pa., 250 tons, office and shop building for West Penn Power Co.

Baltimore, 400 tons, garage for Stewart Realty Co.

Washington, 300 tons, Franklin Street bridge; bids in.

SOUTH AND SOUTHWEST

State of Mississippi, 525 tons, bridges.

State of Arkansas, 1125 tons, bridges.

State of Oklahoma, 2225 tons, bridges.

Houston, Tex., 1800 tons, exhibition building.

State of Arizona, 175 tons, bridge for Santa Fe Railroad.

CENTRAL STATES

Cleveland, 500 tons, factory extension for Cleveland Twist Drill Co.

Toledo, 500 to 800 tons, cracking plant for Standard Oil Co.

Dayton, Ohio, 550 tons, plant addition for Inland Mfg. Co.

Pontiac, Mich., 500 tons, addition to factory building, General Motors Truck Corp.

Milwaukee, 630 tons, bridge for Milwaukee Road.

State of Iowa, 3700 tons, 12 highway bridges.

Beardstown, Ill., 750 tons, dam across Illinois River; also 225 tons of forgings and 160 tons of steel castings.

Bellevue, Iowa, 2100 tons, dam across Mississippi River; also 125 tons of steel castings.

Clarksville, Mo., 1000 tons, lock No. 24 in Mississippi River; Central Engineering Co., Davenport, Iowa, low bidder on general contract.

St. Louis, 550 tons, Kingshighway viaduct; Chase Construction Co., St. Louis, low bidder on general contract.

State of Missouri, 1650 tons, penitentiary.

State of Nebraska, 3200 tons, 12 highway bridges.

WESTERN STATES

Los Angeles, 114 tons, bridge for United States Engineers; bids July 3.

San Francisco, 100 tons, East Bay terminal building on Transbay bridge; bids soon.

Berkeley, Cal., 500 tons, addition for California Corrugated Culvert Co.; bids soon.

Alameda, Cal., 4000 tons, hangars at naval air base; bids soon.

Oakland, Cal., 5000 tons, addition for Moore Dry Dock Co.; bids opened.

Los Angeles, 1000 tons, Federal jail; bids advanced to July 13.

FABRICATED PLATES

AWARDS

South Portland, Me., 355 Valvoline Oil Co. tanks, to Chicago Bridge & Iron Works.

Fall River, Mass., 115 tons, William C. Atwater Co. tanks, to Graver Tank & Mfg. Corp., East Chicago, Ind.

Carteret, N. J., 1200 tons, tank, to Graver Tank & Mfg. Corp.

NEW PROJECTS

Birmingham, 11,000 tons, water pipe.

Manitowoc, Wis., 200 tons, 36-in. pipe line in Lake Michigan for city water plant; McMullen & Pitz Construction Co., local, low bidder.

Denver, 3610 tons, city pipe line; bids advanced to July 10.

Los Angeles, 3500 tons; Aqueduct distribution system; bids July 30.

SHEET PILING

AWARDS

Palmer, Kan., 591 tons, Government project, to Inland Steel Co.

Potholes, Cal., 352 tons, All American Canal, to Bethlehem Steel Co.

Potholes, 176 tons, All American Canal, to Carnegie-Illinois Steel Corp.

Denver, 660 tons for Bureau of Reclamation, to Bethlehem Steel Co.

NEW PROJECTS

Bellevue, Iowa, 1600 tons, dam across Mississippi River.

Beardstown, Ill., 3000 tons, locks and dam across Illinois River.

Cleveland, 300 tons, Westerly sewage disposal plant.

Yuma, Ariz., 300 tons, All American Canal; bids July 23.

Bethlehem Opens New Lackawanna Sheet Mill

EXECUTIVES of the Bethlehem Steel Co. were hosts June 30 to some 60 financial and business paper editors on the occasion of the opening of the new Lackawanna strip sheet mill of the company near Buffalo. The mechanical features of the new plant, which cost $20,000,000, are described at length elsewhere in this issue.

A tour of the mill was followed by luncheon at the Wanakah Country Club, at which short addresses were made by Charles M. Schwab, chairman of the Bethlehem company; E. G. Grace, president, and J. H. Van Deventer, editor, THE IRON AGE.

Extracts from Mr. Grace's speech follow:

"At our Lackawanna steel plant we have just witnessed in full operation what means virtually a new industry in Buffalo, and all created within the short space of one year. I refer, of course, to this continuous strip sheet mill, which has been formally opened today.

"The decision to build this new continuous strip sheet mill was made by us to meet the changing trend of steel into the so-called consumers goods field. While, of course, the demands of progress bring constant development, that is what might at least be called an approach to a final step in a program started about 30 years ago to convert the Bethlehem Steel Co. from its original set-up as an ordnance company to a completely rounded out steel company, manufacturing every commercial steel product.

"It is significant that, with the opening of the new strip mill, employment at the Lackawanna plant totals 2,000 more men than the high average payroll force employed here in 1929.

"This new mill will have an annual capacity of 600,000 tons per year; its products will flow into many lines of industry, including the great automobile industry, the field of construction, into furniture for our homes and offices, into electrical equipment, the vast railroad industry, and, I dare say, virtually every line where materials of utility, strength and durability are a requisite."

SHEPARD NILES

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MOST COMPREHENSIVE LINE OF CRANES & HOISTS

IRON AND STEEL SCRAP

. . . Composite advances 21c. to $12.96 a gross ton.

o o o

. . . Pittsburgh, Chicago and eastern Pennsylvania markets show strong trend.

o o o

. . . Steadily rising market is unlikely.

JUNE 30.—Three weeks ago the scrap market was in the throes of a violent price reaction, but since that time sellers have regained confidence because there has been a tendency for scrap offerings to decline in the face of sustained mill consumption. Mills have recently been forced into the market to obtain supplies to cover late July rolling orders which are now on their books. However, a general expectation of lessened consumer demand in August coupled with discouraging strike talk are two factors working against any steady upward march of scrap prices at this time.

A heavy consumer purchase of No. 1 at Pittsburgh at $13.75 and a dealer-inspired rise at Chicago have served to lift THE IRON AGE composite price 21c. to $12.96, a gross ton, which compares with the year's low level of $12.67 on June 9 and the high of $14.75 on Feb. 26. New purchases are pending in eastern Pennsylvania, and if actual sales are made the composite price should enjoy another moderate advance within the next two weeks.

Export shipments from the country as a whole are currently quite heavy. From 100,000 to 125,000 tons of unfilled orders are still on brokers' books, and it is likely that this backlog will be materially increased over the next month as foreign countries are currently very interested in new commitments.

Pittsburgh

A heavy tonnage of No. 1 steel was purchased this week at $13.75. The market has been firming considerably during the past two weeks, and dealers with $13.50 orders in the majority of cases are paying the same price to cover. Steel is not coming out any too freely, and the trend will likely be upward in the near future. For these reasons, No. 1 is quoted at a range of $13.50 to $13.75. It is known that some dealers have turned down $13.75 and would even be reluctant to sell at $14, since the majority of them have been in a short position for quite a while.

Chicago

Heavy melting steel has moved up 50c. a ton to a range of $13 to $13.50, delivered consumers' yards. Consumption remains extremely high and dealers and brokers are being forced to raise bids in order to get the No. 1 grade. Railroad offerings are bringing the equivalent of $13.75 and prices are tugging to go higher. The specialty market is active, and prices are strong under the influence of active consumer desire to accumulate supplies at or near present quotations.

Cleveland

Prices have advanced 25c. a ton on steel making and blast furnace grades. Scrap is not coming out very freely, which accounts for the higher prices, as there has been no consumer buying. For heavy melting steel for Youngstown district delivery buyers are paying $13.25 to $13.50 for No. 1 and $12.75 for No. 2. Automobile scrap lists for July are being closed this week, the quantities being about as large as those for June.

Philadelphia

New life has been injected into this market with a modest sale of No. 2 steel to a district melter at $11.50, delivered. Brokers are now paying $11 a ton for No. 2 delivered either at Ivy Rock, Phoenixville or Coatesville. Although No. 1 steel is still carried nominally at $12, the willingness of one broker to pay $12 would indicate that the next sale will go at a better figure. Edward G. Budd Mfg. Co. has just opened bids for its July scrap list, which is made up of 2200 tons of compressed bundles, 400 tons of No. 1 and 500 tons of cast.

Steel mill grades of cast are fairly strong but buying is desultory, and rolling mill grades are nominally priced and inactive.

Buffalo

The market is quiet with no important transactions. The leading consumer is not obtaining much No. 1 at $12. Dealers with recent $11.75 orders for No. 2 steel are busy filling them and are not anxious at this time for new business until there is more definite information regarding the rate of open-hearth operation after July 1.

Boston

The current loading of 9000 tons of No. 2 steel for Japan, the largest single lot ever exported from this port, dominates the market. Other exporters plan to begin loading as soon as the 9000-ton shipment is made. Inquiries for No. 2 cast are noted, but no actual sales have been made. Export turnings continue active at $4.75 a ton, delivered army base. Sentiment regarding the domestic market is better, but shipments are not heavy.

New York

More urgent demand for export scrap has lifted the price of No. 1 steel to $10 and No. 2 to $9. The market here also has been bolstered somewhat by new sales in eastern Pennsylvania. Boats are loading steadily for foreign shipment, but few new sales are reported. Unfilled Japanese orders total about 100,000 tons and will probably not be fully covered until late July or early August.

St. Louis

Offerings are very light both from the railroads and country dealers, and brokers are said to be finding it difficult to fill current orders at a profit. The tendency of the market is upward, although prices are unchanged as compared with last week. An East Side casting mill bought several thousand tons of railroad and special grades.

Cincinnati

The old materials market is dull and featureless. Mills report heavy inventories and substantial advance commitments and refuse new orders at present prices. Dealers resist suggestion of further reduction in quotations. Small quantities of foundry scrap and some steel constitute current shipment.

Canada

Trading in iron and steel scrap is steady but without special feature. Steel mills are showing interest in steel grades and local dealers state that they are making regular shipments to the Steel Co. of Canada, Hamilton, against old contract. Other consumers, both in Toronto and other sections of Ontario also are taking small tonnages. There is a fair demand for steel rails but current offerings are light and accumulations have been cleaned up. Steel axles also have a fair market in the Montreal area and some shipments have recently been made from Toronto. Foundries are interested in iron grades.

Iron and Steel Scrap Prices

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel.	$13.50 to	$13.75
No. 2 hvy. mltng. steel.	12.50 to	12.75
No. 2 RR. wrought....	13.50 to	13.75
Scrap rails	13.50 to	14.00
Rails, 3 ft. and under..	16.00 to	16.50
Comp. sheet steel.....	13.50 to	13.75
Hand bundled sheets..	12.50 to	12.75
Hvy. steel axle turn...	12.00 to	12.25
Machine shop turn....	9.00 to	9.50
Short shov. turn.....	9.25 to	9.75
Mixed bor. & turn. ...	7.50 to	8.00
Cast iron borings.....	10.00 to	10.50
Cast iron carwheels...	13.50 to	14.00
Hvy. breakable cast..	12.50 to	13.00
No. 1 cast	14.50 to	15.00
R.R. knuckles & cplrs..	16.50 to	17.00
Rail. coil & leaf springs	16.50 to	17.00
Rolled steel wheels....	16.50 to	17.00
Low phos. billet crops.	17.50 to	18.00
Low phos. sh. bar.....	17.00 to	17.50
Low phos. punchings.	16.25 to	16.75
Low phos. plate scrap.	16.00 to	16.50
Steel car axles	15.50 to	16.00

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel.	$12.75 to	$13.25
No. 2 hvy. mltng. steel.	11.75 to	12.25
Comp. sheet steel	11.75 to	12.25
Light bund. stampings	8.50 to	9.00
Drop forge flashings...	11.50 to	12.00
Machine shop turn....	7.75 to	8.25
Short shov. turn.	8.50 to	8.75
No. 1 busheling	8.25 to	8.75
Steel axle turnings....	8.50 to	9.00
Low phos. billet crops	17.00 to	17.50
Cast iron borings	8.50 to	8.75
Mixed bor. & turn....	8.50 to	8.75
No. 2 busheling	8.50 to	8.75
No. 1 cast	14.50 to	15.00
Railroad grate bars...	8.00 to	8.50
Stove plate	9.00 to	9.50
Rails under 3 ft.	16.00 to	16.50
Rails for rolling	16.50 to	17.00
Railroad malleable ...	17.00 to	17.50
Cast iron carwheels...	....	15.50

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel.	....	$12.00
No. 2 hvy. mltng. steel.	$11.00 to	11.50
Hydraulic bund., new.	12.00 to	12.50
Hydraulic bund., old..	9.00 to	9.50
Steel rails for rolling..	15.00 to	15.50
Cast iron carwheels...	13.50 to	14.00
Hvy. breakable cast...	12.50 to	13.00
No. 1 cast	13.50 to	14.00
Stove plate (steel wks.)	10.00 to	10.50
Railroad malleable ...	....	16.50
Machine shop turn....	8.00 to	8.50
No. 1 blast furnace....	....	6.25
Cast borings	....	6.00
Heavy axle turnings..	11.00 to	11.50
No. 1 low phos. hvy....	16.00 to	16.50
Couplers & knuckles..	16.00 to	16.50
Rolled steel wheels....	16.00 to	16.50
Steel axles	16.00 to	16.50
Shafting	18.50 to	19.00
No. 1 RR. wrought....	14.50 to	15.00
Spec. iron & steel pipe	12.00 to	12.50
Bundled sheets	12.00 to	12.50
No. 1 forge fire	12.00 to	12.50
Cast borings (chem.)..	10.50 to	13.00

CHICAGO

Delivered to Chicago district consumers:

	Per Gross Ton	
Hvy. mltng. steel	$13.00 to	$13.50
Auto. hvy. mltng. steel	11.00 to	11.50
Shoveling steel	13.00 to	13.50
Hydraul. comp. sheets.	12.00 to	12.50
Drop forge flashings..	11.50 to	12.00
No. 1 busheling.....	11.50 to	12.00
Rolled carwheels	14.50 to	15.00
Railroad tires cut	14.00 to	14.50
Railroad leaf springs..	14.00 to	14.50
Axle turnings	12.00 to	12.50
Steel coup. & knuckles	14.00 to	14.50
Coil springs	15.00 to	15.50
Axle turn. (elec.).....	12.75 to	13.25
Low phos. punchings..	15.00 to	15.50
Low phos. plates, 12 in. and under	15.00 to	15.50
Cast iron borings	6.00 to	6.50
Short shov. turnings..	6.25 to	6.75
Machine shop turn....	5.50 to	6.00
Rerolling rails	14.00 to	14.50
Steel rails under 3 ft...	14.75 to	15.25
Steel rails under 2 ft...	15.25 to	15.75
Angle bars, steel	14.50 to	15.00
Cast iron carwheels ..	13.50 to	14.00
Railroad malleable ...	15.50 to	16.00
Agric. malleable	13.50 to	14.00
	Per Net Ton	
Iron car axles	$17.50 to	$18.00
Steel car axles	14.75 to	15.25
No. 1 RR. wrought....	11.50 to	12.00
No. 2 RR .wrought....	11.50 to	12.00
No. 2 busheling, old...	$6.00 to	$6.50
Locomotive tires	12.00 to	12.50
Pipes and flues	8.00 to	8.50
No. 1 machinery cast..	12.00 to	12.50
Clean auto. cast	11.00 to	11.50
No. 1 railroad cast....	11.00 to	11.50
No. 1 agric. cast.....	10.00 to	10.50
Stove plate	7.00 to	7.50
Grate bars	8.50 to	9.00
Brake shoes	8.50 to	9.00

BUFFALO

Per gross ton, f.o.b. consumers' plants:

No. 1 hvy. mltng. steel.	$12.00 to	$12.50
No. 2 hvy. mltng. steel.	11.25 to	11.75
Scrap rails	12.00 to	12.50
New hy. b'ndled sheets	11.25 to	11.75
Old hydraul. bundles..	10.25 to	10.75
Drop forge flashings..	11.25 to	11.75
No. 1 busheling	11.25 to	11.75
Hvy. axle turnings...	10.50 to	11.00
Machine shop turn....	6.00 to	6.50
Knuckles & couplers..	15.00 to	15.50
Coil & leaf springs....	15.00 to	15.50
Rolled steel wheels....	15.00 to	15.50
Low phos. billet crops.	15.50 to	16.00
Short shov. turnings..	9.00 to	9.50
Mixed bor. & turn....	8.00 to	8.50
Cast iron borings.....	8.00 to	8.50
No. 2 bushelings	....	6.50
Steel car axles	13.50 to	14.00
Iron axles	12.00 to	12.50
No. 1 machinery cast..	13.00 to	13.50
No. 1 cupola cast.....	12.00 to	12.50
Stove plate	10.50 to	11.00
Steel rails, under 3 ft.	15.75 to	16.25
Cast iron carwheels...	11.50 to	12.00
Railroad malleable	15.00 to	15.50
Chemical borings	9.00 to	9.50

BIRMINGHAM

Per gross ton delivered to consumer:

Hvy. melting steel....	$11.00 to	$11.50
Scrap steel rails.....	11.50 to	12.00
Short shov. turnings..	....	7.00
Stove plates	....	8.00
Steel axles	12.00 to	12.50
Iron axles	12.00 to	12.50
No. 1 RR. wrought....	8.50 to	9.00
Rails for rolling	12.50 to	13.00
No. 1 cast	12.00 to	12.50
Tramcar wheels	11.00 to	12.00

ST. LOUIS

Dealers' buying prices per gross ton delivered to consumer:

Selected hvy. steel....	$12.50 to	$13.00
No. 1 hvy. melting....	12.25 to	12.75
No. 2 hvy. melting....	9.75 to	10.25
No. 1 locomotive tires.	11.00 to	11.50
Misc. stand-sec. rails..	13.00 to	13.50
Railroad springs	13.50 to	14.00
Bundled sheets	9.50 to	10.00
No. 2 RR. wrought....	12.00 to	12.50
No. 1 busheling	7.50 to	8.00
Cast bor. & turn.....	4.00 to	4.50
Rails for rolling	14.00 to	14.50
Machine shop turn....	4.00 to	4.50
Heavy turnings	9.25 to	9.75
Steel car axles	13.00 to	13.50
Iron car axles	15.00 to	16.00
No. 1 RR. wrought....	10.50 to	11.00
Steel rails under 3 ft...	14.25 to	14.75
Steel angle bars	14.00 to	14.50
Cast iron carwheels...	11.00 to	11.50
No. 1 machinery cast.	10.75 to	11.25
Railroad malleable ...	13.50 to	14.00
No. 1 railroad cast....	11.00 to	11.50
Stove plate	7.50 to	8.00
Agricul. malleable	12.50 to	13.00

CINCINNATI

Dealers' buying prices per gross ton:

No. 1 hvy. mltng. steel.	$9.50 to	$10.00
No. 2 hvy. mltng. steel.	7.50 to	8.00
Scrap rails for mltng.	10.00 to	10.50
Loose sheet clippings.	5.25 to	5.75
Bundled sheets	7.25 to	7.75
Cast iron borings	4.50 to	5.00
Machine shop turn	5.25 to	5.75
No. 1 busheling	8.00 to	8.50
No. 2 busheling	3.75 to	4.25
Rails for rolling	10.50 to	11.00
No. 1 locomotive tires	9.00 to	9.50
Short rails	13.50 to	14.00
Cast iron carwheels ..	10.00 to	10.50
No. 1 machinery cast..	11.00 to	11.50
No. 1 railroad cast....	10.25 to	10.75
Burnt cast	7.25 to	7.75
Stove plates	7.25 to	7.75
Agricul. malleable	9.25 to	9.75
Railroad malleable	11.00 to	11.50

DETROIT

Dealers' buying prices per gross ton:

No. 1 hvy. mltng. steel.	$9.75 to	$10.25
No. 2 hvy. mltng. steel.	8.50 to	9.00
Boring and turnings.	6.25 to	6.75
Long turnings	6.00 to	6.50
Short shov. turnings..	6.75 to	7.25
No. 1 machinery cast..	14.50 to	15.00
Automotive cast	$13.25 to	$13.75
Hydraul. comp. sheets	10.50 to	11.00
Stove plate	8.00 to	8.50
New factory bushel...	9.25 to	9.75
Old No. 2 busheling...	5.50 to	6.00
Sheet clippings	6.50 to	7.00
Flashings	9.25 to	9.75
Low phos. plate scrap	10.50 to	11.00

CANADA

Dealers' buying prices per gross ton:

	Toronto	Montreal
Hvy. melting steel.....	$7.50	$7.00
Rails, scrap	8.50	8.00
Machine shop turn.....	4.00	4.00
Boiler plate	7.00	6.00
Hvy. axle turnings.....	4.50	4.00
Cast borings	5.00	4.50
Steel borings	4.00	4.00
Wrought pipe	4.00	4.00
Steel axles	8.50	9.00
Axles, wrought iron....	9.00	9.50
No. 1 machinery cast..	11.50	11.00
Stove plate	7.50	7.00
Standard carwheels	11.00	10.50
Malleable	7.00	7.00
Shoveling steel	6.50	6.00
Bushelings	6.00	5.50
Compressed sheets	6.50	6.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel.	$13.00 to	$13.50
Hydraulic bundles	13.00 to	13.50
Machine shop turn....	9.50 to	10.00

NEW YORK

Dealers' buying prices per gross ton:

No. 1 hvy. mtng. steel.	....	$10.00
No. 2 hvy. mltng. steel.	....	9.00
Hvy. breakable cast..	8.00 to	8.50
No. 1 machinery cast.	9.00 to	9.50
No. 2 cast	7.75 to	8.25
Stove plate	6.75 to	7.25
Steel car axles	13.00 to	13.50
Shafting	14.00 to	14.50
No. 1 RR. wrought....	9.00 to	9.50
No. 1 wrought long....	8.50 to	9.00
Spec. iron & steel pipe	8.50 to	9.00
Forge fire	7.50 to	8.00
Rails for rolling.....	10.50 to	11.00
Short shov. turnings..	3.50 to	3.75
Machine shop turn....	3.50 to	3.75
Cast borings	4.50 to	5.00
No. 1 blast furnace....	3.00 to	3.50
Cast borings (chem.)..	9.50 to	10.50
Unprepar. yard scrap.	5.00 to	5.50

Per gross ton, delivered local foundries:

No. 1 machin. cast....	....	$11.50
No. 1 hvy. cast cupola.	....	9.50
No. 2 cast	....	8.00

Add 50c. to 75c. to above quotations to secure North Jersey prices.

BOSTON

Dealers' buying prices per gross ton:

No. 1 hvy. mltng. steel.	$7.50 to	$7.90
Scrap rails	7.50 to	8.00
No. 2 steel	6.50 to	6.90
Breakable cast	7.50 to	7.79
Machine shop turn....	....	3.40
Bund. skeleton, long..	....	6.40
Shafting	13.25 to	13.50
Cast bor., chemical...	5.00 to	7.00

Per gross ton delivered consumers' yards:

Textile cast	$11.00 to	$11.50
No. 1 machin. cast....	11.00 to	11.50
Stove plate	....	9.00

EXPORT

Brokers' buying prices per gross ton:

New York, delivered alongside barges		
No. 1 hvy. mltng. steel.	....	$9.50
No. 2 hvy. mltng. steel.	....	8.50
No. 2 cast	$8.00 to	8.50
Stove plate	7.00 to	7.25
Rails (scrap)	10.50 to	11.00
Philadelphia, on cars at Port Richmond		
No. 1 heavy melting steel.....		$11.00
Boston, on cars at Army Base or Mystic Wharf		
No. 1 hvy. mltng. steel.	....	$10.50
No. 2 hvy. mltng. steel.	....	9.50
Rails (scrap)	....	10.50
Stove plate	....	7.50
Machine shop turn ...	$4.75 to	5.00
New Orleans, on cars at Stuyvesant Dock		
No. 1 hvy. mltng. steel.	$10.00 to	$10.50
No. 2 hvy. mltng. steel.	9.00 to	9.50
Los Angeles, on cars or trucks at local piers		
No. 1 hvy. mltng. steel.	$10.50 to	$11.00
Compressed bundles ..	8.50 to	9.00

PRICES ON FINISHED AND SEMI-FINISHED IRON AND STEEL

SEMI-FINISHED STEEL

Billets, Blooms and Slabs

F.o.b. Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham. Prices at Duluth are $2 a ton higher, and delivered Detroit $3 higher.

	Per Gross Ton
Rerolling	$28.00 to $30.00
Forging quality	35.00 to 37.00

Sheet Bars

F.o.b. Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

	Per Gross Ton
Open-hearth or Bessemer	$28.00 to $30.00

Skelp

F.o.b. Pittsburgh, Chicago, Youngstown, Buffalo, Coatesvile, Pa., Sparrows Point, Md.

	Per Lb.
Grooved, universal and sheared	1.80c.

Wire Rods

(Nos. 4 and 5)

	Per Gross Ton
F.o.b. Pittsburgh or Cleveland	$38.00
F.o.b. Chicago, Youngstown or Anderson, Ind.	39.00
F.o.b. Worcester, Mass.	40.00
F.o.b. Birmingham	41.00
F.o.b. San Francisco	47.00
F.o.b. Galveston	44.00

BARS, PLATES, SHAPES

Iron and Steel Bars

Soft Steel

	Base per Lb.
F.o.b. Pittsburgh	1.85c. to 1.95c.
F.o.b. Chicago or Gary	1.90c. to 2.00c.
F.o.b. Duluth	2.00c. to 2.10c.
Del'd Detroit	2.00c. to 2.10c.
F.o.b. Cleveland	1.90c. to 2.00c.
F.o.b. Buffalo	1.95c. to 2.05c.
Del'd Philadelphia	2.16c. to 2.26c.
Del'd New York	2.20c. to 2.30c.
F.o.b. Birmingham	2.00c. to 2.10c.
F.o.b. cars dock Gulf ports	2.25c. to 2.35c.
F.o.b. cars Pacific ports	2.40c. to 2.50c.

Rail Steel

(For merchant trade)

F.o.b. Pittsburgh	1.70c. to 1.80c.
F.o.b. Cleveland, Chicago, Gary or Moline, Ill.	1.75c. to 1.85c.
F.o.b. Buffalo	1.80c. to 1.90c.
F.o.b. Birmingham	1.85c. to 1.95c.
F.o.b. cars dock Gulf ports	2.10c. to 2.20c.
F.o.b. cars dock Pacific ports	2.25c. to 2.35c.

Billet Steel Reinforcing

(Straight lengths as quoted by distributors)

F.o.b. Pittsburgh	2.05c.
F.o.b. Buffalo, Cleveland, Youngstown, Chicago, Gary or Birmingham	2.10c.
Del'd Detroit	2.20c.
F.o.b. cars dock Gulf ports	2.45c.
F.o.b. cars dock Pacific ports	2.45c.

Rail Steel Reinforcing

(Straight lengths as quoted by distributors)

F.o.b. Pittsburgh	1.90c.
F.o.b. Buffalo, Cleveland, Youngstown, Chicago, Gary or Birmingham	1.95c.
F.o.b. cars dock Gulf ports	2.30c.
F.o.b. cars dock Pacific ports	2.30c.

Iron

F.o.b. Chicago	1.80c.
F.o.b. Pittsburgh (refined)	2.10c.
Delivered New York	2.05c.
Delivered Philadelphia	2.10c.

Cold Finished Bars and Shafting*

	Base per Lb.
F.o.b. Pittsburgh	2.10c. to 2.25c.
F.o.b. Cleveland, Chicago and Gary	2.15c. to 2.30c.
F.o.b. Buffalo	2.20c. to 2.35c.
Del'd Detroit	2.30c. to 2.45c.
Del'd eastern Michigan	2.35c. to 2.50c.

*In quantities of 10,000 to 19,999 lb.

Plates

	Base per Lb.
F.o.b. Pittsburgh	1.80c. to 1.90c.
F.o.b. Chicago or Gary	1.85c. to 1.95c.
Del'd Cleveland	1.995c. to 2.095c.
F.o.b. Coatesvile or Spar. Pt.	1.90c. to 2.00c.
Del'd Philadelphia	1.99c. to 2.09c.
Del'd New York	2.09c. to 2.19c.
F.o.b. Birmingham	1.95c. to 2.05c.
F.o.b. cars dock Gulf ports	2.20c. to 2.30c.
F.o.b. cars dock Pacific ports	2.35c. to 2.45c.
Wrought iron plates, f.o.b. Pittsburgh	3.20c. to 3.30c.

Floor Plates

F.o.b. Pittsburgh	3.35c. to 3.45c.
F.o.b. Chicago	3.40c. to 3.50c.
F.o.b. Coatesville	3.45c. to 3.55c.
F.o.b. cars dock Gulf ports	3.75c. to 3.85c.
F.o.b. cars dock Pacific ports	3.90c. to 4.00c.

Structural Shapes

	Base per Lb.
F.o.b. Pittsburgh	1.80c. to 1.90c.
F.o.b. Chicago	1.85c. to 1.95c.
Del'd Cleveland	1.995c. to 2.095c.
F.o.b. Buffalo or Bethlehem	1.90c. to 2.00c.
Del'd Philadelphia	2.015c. to 2.115c.
Del'd New York	2.0625c. to 2.1625c.
F.o.b. Birmingham (standard)	1.95c. to 2.05c.
F.o.b. cars dock Gulf ports	2.20c. to 2.30c.
F.o.b. cars dock Pacific ports	2.35c. to 2.45c.

Steel Sheet Piling

	Base per Lb.
F.o.b. Pittsburgh	2.15c. to 2.25c.
F.o.b. Chicago or Buffalo	2.25c to 2.35c.
F.o.b. cars dock Gulf or Pacific Coast ports	2.60c. to 2.70c.

RAILS AND TRACK SUPPLIES

F.o.b. Mill

Standard rails, heavier than 60 lb. per gross ton	$36.37½
Angle bars, per 100 lb.	2.55

F.o.b. Code Basing Points

Light rails (from billets) per gross ton	$35.00
Light rails (from rail steel) per gross ton	34.00

	Base per 100 Lb.
Spikes	2.60
Tie plates, steel	1.90
Tie plates, Pacific Coast ports	2.00
Track bolts, to steam railroads	3.60
Track bolts, to jobbers, all sizes (per 100 counts) 70 per cent off list	

Basing points on light rails are Pittsburgh, Chicago and Birmingham; on spikes and tie plates, Pittsburgh, Chicago, Buffalo, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; on tie plates alone, Steelton, Pa.; on spikes alone, Cleveland, Youngstown, Lebanon, Pa., Columbia, Pa., Richmond, Va.

SHEETS, STRIP, TIN PLATE, TERNE PLATE

Sheets

Hot Rolled

	Base per Lb.
No. 10, f.o.b. Pittsburgh	1.95c.
No. 10, f.o.b. Gary	2.05c.
No. 10, de'd Detroit	2.15c.
No. 10, del'd Philadelphia	2.26c.
No. 10, f.o.b. Birmingham	2.10c.
No. 10, f.o.b. cars dock Pacific ports	2.50c.

Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh	2.50c.
No. 24, f.o.b. Gary	2.60c.
No. 24, del'd Detroit	2.70c.
No. 24, del'd Philadelphia	2.81c.
No. 24, f.o.b. Birmingham	2.65c.
No. 24, f.o.b. cars dock Pacific ports	3.15c.
No. 24, wrought iron, Pittsburgh	4.30c.

Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh	2.60c.
No. 10 gage, f.o.b. Gary	2.70c.
No. 10 gage, f.o.b. Detroit	2.80c.
No. 10 gage, del'd Philadelphia	2.91c.
No. 10 gage, f.o.b. Birmingham	2.75c.
No. 10 gage, f.o.b. cars dock Pacific ports	3.20c.

Light Cold-Rolled

No. 20 gage, f.o.b. Pittsburgh	3.05c.
No. 20 gage, f.o.b. Gary	3.15c.
No. 20 gage, del'd Detroit	3.25c.
No. 20 gage, del'd Philadelphia	3.36c.
No. 20 gage, f.o.b. Birmingham	3.20c.
No. 20 f.o.b. cars dock Pacific ports	3.60c.

Galvanized Sheets

No. 24 gage, f.o.b. Pittsburgh	3.20c.
No. 24, f.o.b. Gary	3.30c.
No. 24, del'd Philadelphia	3.51c.
No. 24, f.o.b. Birmingham	3.35c.
No. 24, f.o.b. cars dock Pacific ports	3.80c.
No. 24, wrought iron, Pittsburgh	4.95c.

Long Ternes

No. 24, unassorted 8-lb. coating f.o.b. Pittsburgh	3.50c.
F.o.b. Gary	3.60c.
F.o.b. cars dock Pacific ports	4.20c.

Vitreous Enameling Stock

No. 20, f.o.b. Pittsburgh	3.05c.
No. 20, f.o.b. Gary	3.15c.
No. 20, f.o.b. Birmingham	3.65c.
No. 20, f.o.b. cars dock Pacific ports	3.65c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	2.75c.
No. 28, Gary	2.85c.
No. 28, cars dock Pacific ports	3.35c.

Tin Plate

	Base per Box
Standard cokes, f.o.b. Pittsburgh district mill	$5.25
Standard cokes, f.o.b. Gary	5.35
Standard cokes, f.o.b. cars dock Pacific ports	5.90

Terne Plate

(F.o.b. Pittsburgh)

(Per Package, 20 x 28 in.)

8-lb. coating I.C.	$10.00
15-lb. coating I.C.	12.00
20-lb. coating I.C.	13.00
25-lb. coating I.C.	14.00
30-lb. coating I.C.	15.25
40-lb. coating I.C.	17.50

Hot-Rolled Hoops, Bands, Strips and Flats under ¼ In.

	Base per Lb
All widths up to 24 in., P'gh	1.95c.
All widths up to 24 in., Chicago	2.05c.
All widths up to 24 in., del'd Detroit	2.15c.
All widths up to 24 in., Birmingham	2.10c.
Cooperage stock, Pittsburgh	2.05c.
Cooperage stock, Chicago	2.15c.

Cold-Rolled Strips*

	Base per Lb.
F.o.b. Pittsburgh	2.60c.
F.o.b. Cleveland	2.60c.
Del'd Chicago	2.895c.
F.o.b. Worcester	2.80c.

* Carbon 0.25 and less.

Cold-Rolled Spring Steel

	Pittsburgh and Cleveland	Worcester
Carbon 0.25-0.50%	2.60c.	2.80c.
Carbon .51- .75	3.45c.	3.65c.
Carbon .76-1.00	4.95c.	5.15c.
Carbon Over 1.00	6.50c.	6.70c.

Fender Stock

No. 14, Pittsburgh or Cleveland	2.90c.
No. 14, Worcester	3.30c.
No. 20, Pittsburgh or Cleveland	3.30c.
No. 20, Worcester	3.70c.

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland.)

To Manufacturing Trade

	Per Lb.
Bright wire	2.40c.
Spring wire	3.05c.

Chicago prices on products sold to the manufacturing trade are $1 a ton above Pittsburgh or Cleveland. Worcester and Duluth prices are $2 a ton above, Birmingham $3 above, and Pacific Coast prices $9 a ton above Pittsburgh or Cleveland.

To the Trade

	Base per Keg
Standard wire nails	$2.19
Smooth coated nails	2.10

	Base per 100 Lb.
Annealed fence wire	$2.65
Galvanized fence wire	3.00
Polished staples	2.80
Galvanized staples	3.05
Barbed wire, galvanized	2.60
Twisted barbless wire	2.60
Woven wire fence, base column	58
Single loop bale ties, base column	51

Chicago and Anderson, Ind., mill prices are $1 a ton over Pittsburgh base (on all products except woven wire fence, for which the Chicago price is $2 above Pittsburgh); Duluth, Minn., mill prices are $2 a ton over Pittsburgh except for woven wire fence, which is $3 over Pittsburgh and Birmingham mill prices are $3 a ton over Pittsburgh.

On wire nails, barbed wire and staples, prices at Houston, Galveston and Corpus Christi, Tex., New Orleans, Lake Charles, La., and Mobile, Ala., are $6 a ton over Pittsburgh.

On nails, staples and barbed wire, prices of $6 a ton above Pittsburgh are also quoted at Beaumont and Orange, Tex.

STEEL AND WROUGHT IRON PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

F.o.b. Pittsburgh only on wrought iron pipe.

Butt Weld

Steel In.	Black	Galv.	*Wrought Iron* In.	Black	Galv.
⅛	57	37	⅛	+91½	+138
¼ to ⅜	60	44½	¼ & ⅜	+1½	+21½
½	64½	55	½	31½	15
¾	67½	59	¾	36½	20½
1 to 3	69½	61½	1 & 1¼	39½	25½
			1½	43½	28
			2	41½	26

Lap Weld

2	62	53½	2	37	22½
2½ to 3	65	56½	2½ to 3½	38	25
3½ to 6	67	58½	4 to 8	40	28½
7 & 8	66	56½	9 to 12	38	24½
9 & 10	65½	56			
11 & 12	64½	55			

Butt Weld, extra strong, plain ends

⅛	55½	42½	⅛	+13	+45½
¼ to ⅜	57½	46½	¼ & ⅜	+2½	+34½
½	62½	54½	½	32½	17½
¾	66½	58½	¾	37½	22½
1 to 3	68	61	1 to 2	43½	29

Lap Weld, extra strong, plain ends

2	60	52½	2	40	26
2½ to 3	64	56½	2½ to 4	45½	33
3½ to 6	67½	60	4½ to 6	45	33½
7 & 8	66½	57	7 & 8	46	33
9 & 10	65½	56	9 to 12	41½	30
11 & 12	64½	55			

On butt-weld and lap-weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base eard.

Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Seamless Steel Commercial Boiler Tubes and Locomotive Tubes

(Net base prices per 100 ft. f.o.b. Pittsburgh in carload lots)

		Cold Drawn	Hot Rolled
1 in. o.d.	13 B.W.G.	$ 8.60	$ 7.82
1¼ in. o.d.	13 B.W.G.	10.19	9.26
1½ in. o.d.	13 B.W.G.	11.26	10.23
1¾ in. o.d.	13 B.W.G.	12.81	11.64
2 in. o.d.	13 B.W.G.	14.35	13.04
2¼ in. o.d.	13 B.W.G.	16.00	14.54
2½ in. o.d.	12 B.W.G.	17.61	16.01
2¾ in. o.d.	12 B.W.G.	19.29	17.54
3¼ in. o.d.	12 B.W.G.	20.45	18.59
3 in. o.d.	12 B.W.G.	$21.45	$19.50
4½ in o.d.	10 B.W.G.	41.08	37.35
3½ in. o.d.	11 B.W.G.	27.09	24.62
4 in. o.d.	10 B.W.G.	33.60	30.54
4½ in. o.d.	10 B.W.G.	41.08	37.35
5 in. o.d.	9 B.W.G.	51.56	46.87
6 in. o.d.	7 B.W.G.	79.15	71.90

Extra for less-carload quantities:

25,000 lb. or ft. to 39,999 lb. or ft.	5 %
12,000 lb. or ft. to 24,999 lb. or ft.	12½%
6,000 lb. or ft. to 11,999 lb. or ft.	25 %
2,000 lb. or ft. to 5,999 lb. or ft.	35 %
Under 2,000 lb. or ft.	50 %

CAST IRON WATER PIPE

Per Net Ton

*6-in. and larger, del'd Chicago.	$48.40
6-in. and larger, del'd New York	45.20
*6-in. and larger, Birmingham	40.00
6-in. and larger, f.o.b. dock, San Francisco or Los Angeles	48.00
F.o.b. dock, Seattle	48.50
F.o.b. dock, Seattle	51.50

Class "A" and gas pipe, $3 extra. 4-in. pipe is $3 a ton above 6-in.

* Prices for lots of less than 200 tons. For 200 tons and over, 6-in. and larger is $39, Birmingham, and $47.40, delivered Chicago and 4-in. pipe, $42, Birmingham, and $50.40 a ton, delivered Chicago.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List

Machine and carriage bolts:	
½ in. x 6 in. and smaller	70 and 10
Larger than ½ in.	70 and 5
Lag bolts	70 and 5
Plow bolts, Nos. 1, 2, 3, and 7 heads	70 and 5
Hot-pressed nuts, blank or tapped, square	70 and 5
Hot-pressed nuts, blank or tapped, hexagon	70 and 5
C.p.c. and t. square or hex. nuts, blank or tapped	70 and 5
Semi-finished hexagon nuts, U.S.S. and S.A.E., all sizes	60, 20 and 10
Stove bolts in packages, nuts attached	75
Stove bolts in packages, with nuts separate	75 and 5
Stove bolts in bulk	82½
Tire bolts	50 and 5

On stove bolts freight is allowed to destination on 200 lb. and over.

Large Rivets

(½-in. and larger)

Base per 100 Lb.

F.o.b. Pittsburgh or Cleveland	$3.05
F.o.b. Chicago or Birmingham	3.15

Small Rivets

(7/16-in. and smaller)

Per Cent Off List

F.o.b. Pittsburgh	70 and 5
F.o.b. Cleveland	70 and 5
F.o.b. Chicago and Birm'g'm.	70 and 5

Cap and Set Screws

(Freight allowed up to but not exceeding 65c. per 100 lbs. on lots of 200 lb. or more)

Per Cent Off List

Milled cap screws, 1 in. dia. and smaller	80, 10 and 10
Milled standard set screws, case hardened, 1 in. dia. and smaller	75
Milled headless set screws, cut thread ¾ in. and smaller	75
Upset hex. head cap screws U.S.S. or S.A.E. thread, 1 in and smaller	85
Upset set screws, cut and oval points	75 and 10
Milled studs	65 to 65 and 10

Alloy and Stainless Steel

Alloy Steel Blooms, Billets and Slabs

F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem.

Base price, $49 to $51 a gross ton.

Alloy Steel Bars

F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.

Open-hearth grade, base, 2.45c. to 2.55c.

Delivered price at Detroit is 2.60c. to 2.70c.

S.A.E. Series Numbers	Alloy Differential per 100 lb.
2000 (½% Nickel)	$0.25
2100 (2½% Nickel)	0.95
2300 (3½% Nickel)	1.50
2500 (5% Nickel)	2.25
3100 Nickel Chromium	0.55
3200 Nickel Chromium	1.35
3300 Nickel Chromium	3.80
3400 Nickel Chromium	3.20
4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum)	0.50
4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum)	0.70
4600 Nickel Molybdenum (0.20 to 0.30) Molybdenum (1.50 to 2.00 Nickel)	1.05
5100 Chromium Steel (0.60 to 0.90 Chromium)	0.35
5100 Chromium Steel (0.80 to 1.10 Chromium)	0.45
5100 Chromium Spring Steel	base
6100 Chromium Vanadium Bar	1.10c.
6100 Chromium Vanadium Spring Steel	$0.70
Chromium Nickel Vanadium	1.40
Carbon Vanadium	0.85

These prices are for hot-rolled steel bars. The differential for most grades in electric furnace steel is 50c. higher. The differential for cold-drawn bars ½c. per lb. higher with separate extras. Blooms, billets and slabs under 4x4 in. or equivalent are sold on the bar base. Slabs with a section area of 16 in. and 2½ in. thick or over take the billet base. Sections 4x4 in. to 10x10 in. or equivalent carry a gross ton price, which is the net price for bars for the same analysis. Larger sizes carry extras.

Alloy Cold-Finished Bars

F.o.b. Pittsburgh, Chicago, Gary, Cleveland or Buffalo, 2.95c. to 3.05c. base per lb. Delivered Detroit, 3.10c. to 3.20c.

STAINLESS STEEL No. 302

(17 to 19% Cr, 7 to 9% Ni, 0.08 to 0.20% C.)

(Base Prices f.o.b. Pittsburgh)

	Per Lb.
Forging billets	19.55c.
Bars	23c.
Plates	26c.
Structural shapes	23c.
Sheets	33c.
Hot-rolled strip	20¾c.
Cold-rolled strip	27c.
Drawn wire	23c.

TOOL STEEL

	Base per Lb.
High speed	55c.
High carbon chrome	35c.
Oil hardening	20c.
Extra	15c.
Regular	12c.

Prices for warehouse distribution to all points on or East of Mississippi River are 2c. a lb. higher. West of Mississippi quotations are 3c. a lb. higher.

British and Continental

BRITISH

Per Gross Ton
f.o.b. United Kingdom Ports

Based on exchange rate as of June 29

Ferromanganese, export	$45.24
Billets, open-hearth	29.57 to $30.83
Tin plate, per base box	4.77 to 4.80
Steel bars, open-hearth	39.58
Beams, open-hearth	38.33
Channels, open-hearth	39.58
Angles, open-hearth	38.33
Black sheets, No. 24 gage	49.00
Galvanized sheets, No. 24 gage	59.05

CONTINENTAL

Per Metric Ton, f.o.b. Continental Ports

Based on Exchange rate of June 29

Billets, Thomas	$19.27
Wire rods, No. 5 B.W.G.	36.90
Steel bars, merchant	26.64
Sheet bars	19.68
Plate, ¼ in. and up	35.42
Plate, 3/16 in. and 5 mm.	34.35
Sheets, ⅛ in.	36.90
Beams, Thomas	25.58
Angles (Basic)	25.58
Hoops and strip base	32.79
Wire, plain, No. 8	44.03
Wire nails	47.15
Wire, barbed, 4 pt. No. 10 B.W.G.	71.74

IRON AND STEEL WAREHOUSE PRICES

PITTSBURGH

Base per Lb.

Plates	3.15c.
Structural shapes	3.15c.
Soft steel bars and small shapes	2.95c.
Reinforcing steel bars	2.95c.
Cold-finished and screw stock:	
Rounds and hexagons	3.35c.
Squares and flats	3.35c.
Hoops and bands under ¼ in.	3.20c.
Hot-rolled annealed sheets (No. 24), 25 or more bundles	3.30c.
Galv. sheets (No 24), 25 or more bundles	3.95c.
Hot-rolled sheets (No. 10)	2.95c.
Galv. corrug. sheets (No. 28), per square (more than 3750 lb.)	$3.69
Spikes, large	3.10c.
Track bolts, all sizes, per 100 count	65 per cent off list
Machine bolts, 100 count,	65 per cent off list
Carriage bolts, 100 count,	65 per cent off list
Nuts, all styles, 100 count,	65 per cent off list
Large rivets, base per 100 lb.	$3.80
Wire, black, soft ann'l'd, base per 100 lb.	2.90c.
Wire, galv. soft, base per 100 lb.	3.25c.
Common wire nails, per keg	2.35c.
Cement coated nails, per keg	2.35c.

On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applies to orders of 400 to 9999 lb.

*Delivered in Pittsburgh switching district.

CHICAGO

Base per Lb.

Plates and structural shapes	3.20c.
Soft steel bars, rounds	3.00c.
Soft steel bars, squares and hexagons	3.15c.
Cold-fin. steel bars:	
Rounds and hexagons	3.50c.
Flats and squares	3.50c.
Hot-rolled strip	3.30c.
Hot-rolled annealed sheets (No. 24)	3.85c.
Galv. sheets (No. 24)	4.55c.
Hot-rolled sheets (No. 10)	3.05c.
Spikes (keg lots)	3.50c.
Track bolts (keg lots)	4.65c.
Rivets, structural (keg lots)	3.65c.
Rivets, boiler (keg lots)	3.75c.

Per Cent Off List

Machine bolts	*70
Carriage bolts	*70
Lag screws	*70
Hot-pressed nuts, sq. tap or blank	*70
Hot-pressed nuts, hex. tap or blank	*70
Hex. head cap screws	87½
Cut point set screws	75 and 10
Flat head bright wood screws	70
Spring cotters	55
Stove bolts in full packages	70
Rd. hd. tank rivets, 7/16 in. and smaller	57½
Wrought washers	$4.50 off list
Black ann'l'd wire per 100 lb.	$3.85
Com. wire nails, base per keg	2.95†
Cement c't'd nails, base per keg	2.95†

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 9999 lb. All prices are fo.b. consumers' plants within the Chicago switching district.

*These are quotations delivered to city trade for quantities of 100 lb. or more. For lots of less than 100 lb., the quotation is 65 per cent off. Discounts applying to country trade are 70 per cent off, f.o.b. Chicago, with full or partial freight allowed up to 50c. per 100 lb.

†Prices for city and suburbs only.

NEW YORK

Base per Lb.

Plates, ¼ in. and heavier	3.40c.
Structural shapes	3.37c.
Soft steel bars, rounds	3.31c.
Iron bars	3.31c.
Iron bars, Swed. charcoal	6.75c. to 7.00c.
Cold-fin. shafting and screw stock:	
Rounds and hexagons	3.96c.
Flats and squares	3.96c.
Cold-rolled; strip, soft and quarter hard	3.36c.
Hoops	3.56c.
Bands	3.56c.
Hot-rolled sheets (No. 10)	3.31c.
Hot-rolled ann'l'd sheets (No. 24*)	3.89c.
Galvanized sheets (No. 24*)	Special
Long terne sheets (No. 24)	5.25c.
Standard tool steel	11.00c.
Wire, black annealed (No. 10)	3.40c.
Wire, galv. (No. 10)	3.75c.
Tire steel, 1 x ½ in. and larger	3.75c.
Open-hearth spring steel	4.00c. to 10.00c.
Common wire nails, base per keg	$3.21

Per Cent Off List

Machine bolts, square head and nut:	
All diameters	65 and 10
Carriage bolts, cut thread:	
All diameters	65 and 10

Per 100 Ft.

Boiler tubes:	
Lap welded, 2-in.	$18.05
Seamless welded, 2-in.	19.24
Charcoal iron, 2-in.	24.94
Charcoal iron, 4-in.	63.65

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

ST. LOUIS

Base per Lb.

Plates and struc. shapes	3.45c.
Bars, soft steel (rounds and flats)	3.25c.
Bars, soft steel (squares, hexagons, ovals, half ovals and half rounds)	3.40c.
Cold-fin. rounds, shafting, screw stock	3.75c.
Hot-rolled annealed sheets (No. 24)	4.10c.
Galv. sheets (No. 24)	4.65c.
Hot-rolled sheets (No. 10)	3.30c.
Black corrug. sheets (No. 24)	4.10c.
*Galv. corrug. sheets	4.65c.
Structural rivets	4.00c.
Boiler rivets	4.10c.

Per Cent Off List

Tank rivets, 7/16 in. and smaller	55
Machine and carriage bolts, lag screws, fitting up bolts, bolt ends, plow bolts, hot-pressed nuts, square and hexagon, tapped or blank, semi-finished nuts; all quantities	70

*No. 26 and lighter take special prices.

PHILADELPHIA

Base per Lb.

*Plates, ¼-in. and heavier	2.98c.
*Structural shapes	2.98c.
*Soft steel bars, small shapes, iron bars (except bands)	3.03c.
‡Reinforc. steel bars, sq. twisted and deformed	2.96c.
Cold-finished steel bars	3.76c.
*Steel hoops	3.43c.
*Steel bands, No. 12 and 3/16 in. incl.	3.18c.
Spring steel	5.00c.
†Hot-rolled anneal. sheets (No. 24)	3.65c.
†Galvanized sheets (No. 24)	4.40c.
*Hot-rolled annealed sheets (No. 10)	3.08c.
Diam. pat. floor plates, ¼ in.	4.95c.
Swedish iron bars	6.25c.

These prices are subject to quantity differential except on reinforcing and Swedish iron bars.

*Base prices subject to deduction on orders aggregating 4000 lb. or over.

†For 25 bundles or over.

‡For less than 2000 lb.

CLEVELAND

Base per Lb.

Plates and struc. shapes	3.31c.
Soft steel bars	3.00c.
Reinforc. steel bars	2.10c.
†Cold-finished steel bars	3.50c.
Flat-rolled steel under ¼ in.	3.36c.
Cold-finished strip	†3.00c.
Hot-rolled annealed sheets (No. 24)	3.91c.
Galvanized sheets (No. 24)	4.61c.
Hot-rolled sheets (No. 10)	3.11c.
Hot-rolled 3/16 in. 24 to 48 in. wide sheets	3.56c.
*Black ann'l'd wire, per 100 lb.	$2.40
*No. 9 galv. wire, per 100 lb.	2.75
*Com. wire nails, base per keg	2.35

†Outside delivery 10c. less.

*For 5000 lb. or less.

CINCINNATI

Base per Lb.

Plates and struc. shapes	3.52c.
Bars, rounds, flats and angles	3.32c.
Other shapes	3.47c.
Rail steel reinforc. bars	3.25c.
Hoops and bands, 3/16 in. and lighter	3.57c.
Cold-finished bars	3.87c.
Hot-rolled annealed sheets (No. 24) 25 bundles or more	4.62c.
Galv. sheets (No. 24) 500 lb. or less	4.47c.
Galvanized sheets (No. 24) over 3500 lb.	4.07c.
Hot-rolled sheets (No. 10)	3.32c.
Structural rivets	4.50c.
Small rivets	55 per cent off list
No. 9 ann'l'd wire, per 100 lb. (1000 lb. or over)	$2.88
Com. wire nails, base per keg:	
Any quantity less than carload	3.04
Cement c't'd nails, base 100-lb. keg	3.50
Chain, lin. per 100 lb	8.35

Net per 100 Ft.

Seamless steel boiler tubes, 2-in.	$20.37
4-in.	48.14
Lap-welded steel boiler tubes, 2-in.	19.38
4-in.	45.32

BUFFALO

Base per Lb.

Plates	3.38c.
Struc. shapes	3.25c.
Soft steel bars	3.05c.
Reinforcing bars	2.60c.
Cold-fin. flats and sq.	3.55c.
Rounds and hex.	3.55c.
Cold-rolled strip steel	3.19c.
Hot-rolled annealed sheets (No. 24)	4.06c.
Heavy hot-rolled sheets (3/16 in., 24 to 48 in. wide)	3.43c.
Galv. sheets (No. 24)	4.70c.
Bands	3.43c.
Hoops	3.43c.
Heavy hot-rolled sheets	3.18c.
Com. wire nails, base per keg	$3.10
Black wire, base per 100 lb. (2500-lb. lots or under)	4.00
(Over 2500 lb.)	3.90

BOSTON

Base per Lb.

Beams, channels, angles, tees, zees	3.54c.
H beams and shapes	3.54c.
Plates — Sheared, tank, and univ. mill, ¼ in. thick and heavier	3.56c.
Floor plates, diamond pattern	5.36c.
Bar and bar shapes (mild steel)	3.45c.
Bands 3/16 in. thick and No. 12 ga. incl.	3.65c. to 4.65c.
Half rounds, half ovals, ovals and bevels	4.70c.
Tire steel	4.70c.
Cold-rolled strip steel	3.245c.
Cold-finished rounds, squares and hexagons	3.90c.
Cold-finished flats	3.90c.
Blue annealed sheets, No. 10 ga.	3.65c.
One pass cold-rolled sheets No. 24 ga.	4.20c.
Galvanized steel sheets, No. 24 ga.	4.00c.
Lead coated sheets, No. 24 ga.	5.85c.

Price delivered by truck in metropolitan Boston, subject to quantity differentials.

DETROIT

	Base per Lb.
Soft steel bars	3.19c.
Structural shapes	3.52c.
Plates	3.52c.
Floor plates	5.27c.
Hot-rolled annealed sheets (No. 24)*	4.04c.
Hot-rolled sheets (No. 10)**	3.24c.
Galvanized sheets (No. 24)	4.82c.
Bands	3.49c.
Hoops	3.49c.
†Cold-finished bars	3.79c.
Cold-rolled strip	3.18c.
Hot-rolled alloy steel (S.A.E. 3100 Series)	5.44c.
Bolts and nuts, in cases, 70 and 10 per cent off list	
Broken cases	70 per cent off

Prices delivered by truck in metropolitan Detroit, subject to quantity differentials covering shipment at one time.

* Base less 0.25c., 3500 lb. and over. Add 0.50c. per hundred lb. for broken bundles.

** Base less 0.25c., 1500 to 3749 lbs.; less 0.50c., 3750 to 7499 lb.; less 0.75c., 7500 lb. and over.

Galvanized and hot-rolled annealed may not be combined to obtain quantity deductions.

Country territory to be equalized on the Chicago plan.

MILWAUKEE

	Base per Lb.
Plates and structural shapes	3.31c.
Soft steel bars, rounds up to 8 in., flats and fillet angles	3.11c.
Soft steel bars, squares and hexagons	3.26c.
Hot-rolled strip	3.41c.
Hot-rolled sheets (No. 10)	3.16c.
Hot-rolled annealed 3/16—24 in. to 48 in. wide incl.	3.41c.
Hot-rolled annealed sheets (No. 24)	3.96c.
Galvanized sheets (No. 20)	4.66c.
Cold-finished steel bars	3.61c.
Cold-rolled strip	3.33c.
Structural rivets (keg lots)	3.86c.
Boiler rivets, cone head (keg lots)	3.96c.
Track spikes (keg lots)	3.91c.
Track bolts (keg lots)	4.91c.
Black annealed wire	3.40c.
Com. wire nails	2.60c.
Cement coated nails	2.60c.

	Per Cent Off List
Machine bolts, carriage bolts and lag screws	70 to 75
Hot-pressed nuts, sq. and hex. tapped or blank (keg lots)	70

Prices given above are delivered Milwaukee.

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 9999 lb. On galvanized and No. 24 hot-rolled annealed sheets the prices given apply on orders of 400 to 1500 lb. On cold-finished bars the prices are for orders of 1000 lb. or more of a size.

ST. PAUL

	Base per Lb.
Mild steel bars, rounds	3.25c.
Structural shapes	3.45c.
Plates	3.45c.
Cold-finished bars	4.02c.
Bands and hoops	3.55c.
Hot-rolled annealed sheets, No. 24	3.90c.
Galvanized sheets, No. 24	4.50c.
Cold-rolled sheets, No. 20	4.95c.

On mild steel bars, shapes, plates and hoops and bands the base applies on 400 to 14,999 lb. On hot-rolled sheets, galvanized sheets and cold-rolled sheets base applies on 15,000 lb. and over. Base on cold-finished bars is 1000 lb. and over of a size.

BALTIMORE

	Base per Lb.
*Mild steel bars	3.00c.
**Reinforcing bars	2.85c.
*Structural shapes	3.00c.
†Plates	3.00c.
†Hot-rolled sheets, No. 10	3.10c.
‡Hot-rolled annealed sheets, No 24	3.60c.
‡Galvanized sheets, No. 24	4.30c.
*Bands	3.20c.
*Hoops	3.45c.
§Cold-rolled rounds	3.73c.
§Cold-rolled squares, hex. and flats	3.73c.
Rivets	4.40c.
Bolts and nuts, per cent off list	60 and 10

*Quantity extras per size apply.

†Quantity extras per thickness apply. Hot-rolled quantity extras are: 2000 lb. and over, base: 1500 lb. to 1999 lb. add 15c. per 100 lb.; 1000 lb. to 1499 lb. add 30c.; 0 to 999 lb., add 50c.

‡25 bundles and over, base. For 1 to 9 bundles add 50c. per 100 lb.; for 10 to 24 bundles add 25c.

§Base for 1000 lb. and over. For 500 to 999 lb. add 25c. per 100 lb.; for 300 to 499 lb. add $1.00; for 0 to 299 lb. add $1.75; for combined order under 100 lb. add $3.00.

**For orders 4000 lb. to 9999 lb. Add 15c. per 100 lb. for orders 2000 to 3999 lb.; add 65c. for orders less than 2000 lb.

CHATTANOOGA

	Base per Lb.
Mild steel bars	3.36c.
Iron bars	3.36c.
Reinforcing bars	3.36c.
Structural shapes	3.56c.
Plates	3.56c.
Hot-rolled sheets, No. 10	3.36c.
Hot-rolled annealed sheets No. 24	4.16c.
Galvanized sheets, No. 24	4.86c.
Steel bands	3.61c.
Cold-finished bars	4.13c.

MEMPHIS

	Base per Lb.
Mild steel bars	3.47c.
Shapes, bar size	3.47c.
Iron bars	3.47c.
Structural shapes	3.67c.
Plates	3.67c.
Hot-rolled sheets, No. 10	3.47c.
Hot-rolled annealed sheets, No. 24	4.27c.
Galvanized sheets, No. 24	4.80c.
Steel bands	3.72c.
Cold-drawn rounds	3.89c.
Cold-drawn flats, squares, hexagons	5.89c.
Structural rivets	4.25c.
Bolts and nuts, per cent off list	70
Small rivets, per cent off list.	50

NEW ORLEANS

	Base per Lb.
Mild steel bars	3.35c.
Reinforcing bars	3.50c.
Structural shapes	3.55c.
Plates	3.55c.
Hot-rolled sheets, No. 10	3.55c.
Hot-rolled annealed sheets, No. 24	4.35c.
Galvanized sheets, No. 24	4.95c.
Steel bands	3.95c.
Cold-finished steel bars	4.30c.
Structural rivets	4.25c.
Boiler rivets	4.25c.
Common wire nails, base per keg	$2.65
Bolts and nuts, per cent off list	70

PACIFIC COAST

	Base per Lb. San Francisco	Los Angeles	Seattle
Plates, tank and U. M.	3.25c.	3.60c.	3.80c.
Shapes, standard	3.25c.	3.60c.	3.80c.
Soft steel bars	3.25c.	3.60c.	3.95c.
Reinforcing bars, f.o.b. cars dock Pacific ports	2.45c.	2.45c.	2.45c.
Hot-rolled annealed sheets (No. 24)	4.10c.	4.35c.	4.40c.
Hot-rolled sheets (No. 10)	3.35c.	3.70c.	3.75c.
Galv. sheets (No. 24 and lighter)	4.50c.	4.40c.	5.00c.
Galv. sheets (No. 22 and heavier)	5.00c.	4.60c.	5.00c.
Cold finished steel			
Rounds	5.80c.	5.85c.	6.00c.
Squares and hexagons.	7.05c.	7.10c.	7.25c.
Flats	7.55c.	7.60c.	8.25c.
Common wire nails—base per keg less carload	$2.90	$2.90	$2.90

All items subject to differentials for quantity.

REFRACTORIES PRICES

Fire Clay Brick

	Per 1000 f.o.b. Works
High-heat duty, Pennsylvania, Maryland, Kentucky, Missouri and Illinois	$45.00
High-heat duty, New Jersey	50.00
High-heat duty, Ohio	40.00
Intermediate, Pennsylvania, Maryland, Kentucky, Missouri and Illinois	40.00
Intermediate, New Jersey	43.00
Intermediate, Ohio	35.00
Ground fire clay, per ton	7.00

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	$45.00
Chicago District	54.00
Birmingham	$48.00 to 50.00
Silica cement per net ton	8.00

Chrome Brick

	Per Net Ton
Standard f.o.b Baltimore, Plymouth Meeting and Chester	$45.00
Chemically bonded f.o.b. Baltimore, Plymouth Meeting and Chester, Pa.	45.00

Magnesite Brick

	Per Net Ton
Standard, f.o.b. Baltimore and Chester, Pa.	$65.00
Chemically bonded, f.o.b. Baltimore	55.00

Grain Magnesite

	Per Net Ton
Imported, f.o.b. Baltimore and Chester, Pa. (in sacks)	$45.00
Domestic, f.o.b. Baltimore and Chester, in sacks	40.00
Domestic, f.o.b. Chewelah, Wash.	22.00

RAW MATERIALS PRICES

PIG IRON

No. 2 Foundry

F.o.b. Everett, Mass.; Bethlehem, Birdsboro and Swedeland, Pa., and Sparrows Point, Md. $20.50
Delivered Brooklyn 22.9289
Delivered Newark or Jersey City 21.9873
Delivered Philadelphia 21.3132
F.o.b. Neville Island, Sharpsville and Erie, Pa.; Buffalo; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Granite City, Ill. 19.50
F.o.b. Jackson, Ohio 21.25
Delivered Cincinnati 20.5807
F.o.b. Duluth 20.00
F.o.b. Provo, Utah 17.50
Delivered San Francisco, Los Angeles or Seattle 22.315
F.o.b. Birmingham* 15.50

* Delivered prices on southern iron for shipment to northern points are $8c. a ton below delivered prices from nearest northern basing point.

Malleable

Base prices on malleable iron are 50c. a ton above No. 2 foundry quotations at Everett, Eastern Pennsylvania furnaces, Erie and Buffalo. Elsewhere they are the same.

Basic

F.o.b. Everett, Mass.; Bethlehem, Birdsboro, Swedeland and Steelton, Pa., and Sparrows Point, Md. $20.00
Delivered Boston Switching District 20.50
Delivered Newark or Jersey City 21.4873
Delivered Philadelphia 20.8132
F.o.b. Buffalo 18.50
F.o.b. Neville Island, Sharpsville and Erie, Pa.; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Granite City, Ill. 19.00
Delivered Cincinnati 20.0807
Delivered Canton, Ohio 20.3482
Delivered Mansfield, Ohio.... 20.8832
F.o.b. Jackson, Ohio..... 20.75
F.o.b. Provo, Utah 17.00
F.o.b. Birmingham 14.50

Bessemer

F.o.b. Everett, Mass.; Bethlehem, Birdsboro and Swedeland, Pa. $21.50
Delivered Boston Switching District 22.00
Delivered Newark or Jersey City 22.9873
Delivered Philadelphia..... 22.3132
F.o.b. Buffalo and Erie, Pa., and Duluth 20.50
F.o.b. Neville Island and Sharpsville, Pa.; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Birmingham.. 20.00
Delivered Cincinnati 21.0807
Delivered Canton, Ohio..... 21.3482
Delivered Mansfield, Ohio.... 21.8832

Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y. $24.00

Gray Forge

Valley or Pittsburgh furnace..$19.00

Charcoal

Lake Superior furnace.....$22.00
Delivered Chicago 25.2528

Canadian Pig Iron

Per Gross Ton

Delivered Toronto.

No. 1 fdy., sil. 2.25 to 2.75.....$21.00
No. 2 fdy., sil. 1.75 to 2.75..... 20.50
Malleable 22.50

Delivered Montreal

No. 1 fdy., sil. 2.25 to 2.75.....$22.50
No. 2 fdy., sil. 1.75 to 2.25..... 22.00
Malleable 22.50
Basic 22.00

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.

Per Gross Ton

Domestic, 80% (carload).....$75.00

Spiegeleisen

Per Gross Ton Furnace

Domestic, 19 to 21%.....$26.00
50-ton lots 3-mo. shipment.. 24.00
F.o.b. New Orleans 26.00

Electric Ferrosilicon

Per Gross Ton Delivered

50% (carloads) $69.50
50% (ton lots) 77.00
75% (carloads) 126.00
75% (ton lots) 130.00

Silvery Iron

Per Gross Ton

F.o.b. Jackson, Ohio, 6.00 to 6.50% $22.75

For each additional 0.5% silicon up to 12%, 50c. a ton is added.

The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed. Base prices at Buffalo are $1.25 a ton higher than at Jackson.

Manganese 2 to 3%, $1 a ton additional. For each unit of manganese over 3%, $1 a ton additional. Phosphorus 0.75% or over, $1 a ton additional.

Bessemer Ferrosilicon

F.o.b. Jackson, Ohio, Furnace

Per Gross Ton

10.00 to 10.50%.....$27.75
10.51 to 11.00%..... 28.25
11.00 to 11.50%..... 28.75
11.51 to 12.00%..... 29.25
12.01 to 12.50%..... 29.75
12.51 to 13.00%..... 30.25
13.01 to 13.50%..... 30.75
13.51 to 14.00%..... 31.25
14.01 to 14.50%..... 31.75
14.51 to 15.00%..... 32.25
15.01 to 15.50%..... 32.75
15.51 to 16.00%.....33.25
16.01 to 16.50%..... 33.75
16.51 to 17.00%..... 34.25

Manganese 2 to 3%, $1 a ton additional. For each unit of manganese over 3%, $1 a ton additional. Phosphorus 0.75% or over, $1 a ton additional.

Base prices at Buffalo are $1.25 a ton higher than at Jackson.

Other Ferroalloys

Ferrotungsten, per lb. contained W del., carloads..... $1.30
Ferrotungsten, lots of 5000 lb. 1.35
Ferrotungsten, smaller lots 1.40
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr per lb. contained Cr delivered, in carloads, and contract ..... 10.00c.
Ferrochromium, 2% carbon .....16.50c. to 17.00c.
Ferrochromium, 1% carbon .....17.50c. to 18.00c.
Ferrochromium, 0.10% carbon .....19.50c. to 20.00c.
Ferrochromium, 0.06% carbon .....20.00c. to 20.50c.
Ferrovanadium, del. per lb. contained V. .....$2.70 to $2.90
Ferrocolumbium, per lb. contained columbium, f.o.b. Niagara Falls, N. Y. $2.50
Ferrocarbontitanium, 15 to 18% Ti, 7 to 8% C, f.o.b. furnace carload and contract per net ton $137.50
Ferrocarbontitanium, 17 to 20% Ti, 3 to 5% C, f.o.b. furnace, carload and contract, per net ton 142.50
Ferrophosphorus, electric, or blast furnace material, in carloads, f.o.b. Anniston, Ala., for 18%, with $3 unitage, freight equalized with Rockdale, Tenn., per gross ton 58.50
Ferrophosphorus, electric, 24%, in carlots, f.o.b. Anniston, Ala., per gross ton with $3 unitage, freight equalized with Nashville, Tenn. 75.00
Ferromolybdenum, per lb. Mo del. ..... 95c.
Calcium molybdate, per lb. Mo del. ..... 80c.
Silico spiegel, per ton, f.o.b. furnace, carloads $38.00
Ton lots or less, per ton.... 45.50
Silico-manganese, gross ton, delivered.
2.50% carbon grade..... 85.00
2% carbon grade 90.00
1% carbon grade 100.00

Note: Spot prices are $5 a ton higher except on 75 per cent ferrosilicon on which premium is $10 a ton.

ORES

Lake Superior Ores

Delivered Lower Lake Ports

Per Gross Ton

Old range, Bessemer, 51.50%...$4.80
Old range, non-Bessemer, 51.50% 4.65
Mesabi, Bessemer, 51.50%..... 4.65
Mesabi, non-Bessemer, 51.50%.. 4.50
High phosphorus, 51.50%..... 4.40

Foreign Ore

C.i.f. Philadelphia or Baltimore

Per Unit

Iron, low phos., copper free, 55 to 58% dry Spain or Algeria.10.25c.
Iron, low phos., Swedish, average, 68½% iron .....10.25c.
Iron, basic or foundry, Swedish, aver. 65% iron..... 9.50c.
Iron, basic or foundry, Russian, aver. 65% iron.....Nominal
Man., Caucasian, washed 52%. 26c.
Man., African, Indian, 44-48%. 25c.
Man., African, Indian, 49-51%. 26c.
Man., Brazilian, 46 to 48½%.. 24c.

Per Net Ton Unit

Tungsten, Chinese, wolframite, duty paid, delivered, nominal..16.00
Tungsten, domestic, scheelite delivered, nominal 16.00

Per Gross Ton

Chrome, 45% Cr_2O_3, lamp, c.i.f. Atlantic Seaboard (African).$17.50
45 to 46% Cr_2O_3 (Turkish) $16.50 to 17.00
48% Cr_2O_3 (African) 20.50
48% min. Cr_2O_3 (Turkish).... 19.25
Chrome concentrate, 50% and over Cr_2O_3, c.i.f. Atlantic ports 22.00
52% Cr_2O_3 (Turkish)..... 21.75
48 to 49% Cr_2O_3 (Turkish).. 19.25

FLUORSPAR

Per Net Ton

Domestic, washed gravel, 85-5, f.o.b. Kentucky and Illinois mines, all rail $18.00
Domestic, barge and rail 19.00
No. 2 lump, 85-5, f.o.b. Kentucky and Illinois mines..... 20.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic ports, duty paid.... 21.50
Domestic No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silicon, f.o.b. Illinois and Kentucky mines.... 35.00

FUEL OIL

Per Gal.

F.o.b. Bayonne or Baltimore, No. 3 distillate ..... 4.25c.
F.o.b. Bayonne or Baltimore, No. 4 industrial ..... 3.75c.
Del'd Ch'go, No. 3 industrial 5.00c.
Del'd Ch'go, No. 5 industrial 3.77c.
F.o.b. Cleveland, No. 3 distillate ..... 6.00c.
F.o.b. Cleveland, No. 5 industrial ..... 5.00c.

COKE AND COAL

Coke

Per Net Ton

Furnace, f.o.b. Connellsville Prompt .....$3.65 to $3.80
Foundry, f.o.b. Connellsville Prompt ..... 4.25 to 5.75
Foundry, by-product, Chicago ovens 9.00
Foundry, by-product, del'd New England.... 11.50
Foundry, by-product, del'd Newark or Jersey City 9.65
Foundry, by-product, Philadelphia 9.38
Foundry, by-product, delivered Cleveland... 9.75
Foundry, by-product, delivered Cincinnati.. 9.50
Foundry, Birmingham... 6.50
Foundry, by-product, St. Louis, f.o.b. ovens. 8.00
Foundry, from Birmingham, f.o.b. cars docks, Pacific ports..... 14.75

Coal

Per Net Ton

Mine run steam coal, f.o.b. W. Pa. mines...$1.50 to $1.75
Mine run coking coal, f.o.b. W. Pa..... 1.90 to 2.10
Gas coal, ¾-in. f.o.b. Pa. mines..... 2.00 to 2.25
Mine run gas coal, f.o.b. Pa. mines..... 1.80 to 2.00
Steam slack, f.o.b. W. Pa. mines..... 1.00 to 1.25
Gas slack, f.o.b. W. Pa. mines ..... 1.20 to 1.45

THIS WEEK'S MACHINE . . .TOOL ACTIVITIES. . .

. . . Delivery drives are not sales propaganda.

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. . . Lack of skilled labor energizes bidding for services of capable mechanics.

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. . . Replacement ordering continues to involve standard machines for diversified purposes.

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By L. M. WAITE

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THE machine tool industry enters the third quarter of 1936 still urging the importance of prompt order-coverage on machines which will or may be needed for fall production. Order volume for the half-year was probably more than twice as large as in the comparable 1935 period.

From political and other sources, the report is being circulated that the machine tool branch of durable goods manufacturing is sold out for the balance of 1936. The facts are that while many standard machine sizes are well sold up, the condition offers no justification for sold-out signs; there is still the possibility of getting prompt or reasonably early delivery in many sizes of equipment lines. Even machines of a special nature are being shipped in less than six months.

Two factors are behind new delivery warnings. One is the length of time required for manufacture and assembly of machine tools in lots. The other arises from the fact that size demand is a constantly changing element which places a low safe limit on quantity building for stock.

During the past three years, machine tool designers have done much to speed up manufacturing and assembly through the development of machine units, interchangeable within limited size ranges. The development, however, is not capable of an assembly flexibility which is effective in wide size ranges.

In view of these conditions, the industry remains confronted with the cold fact that advance determination of requirements by the buyer, and order placing on such foresight, is the vehicle which will assuredly bring machine tools to shop doors in time for pressing production needs. It is a mistake to class these warnings as sales propaganda.

Detroit

The greater number of dealers and representatives report a well maintained order level during the final week of June. At least one automotive company is engaged in an expansion not related to model change-over. This type of buying is not determined by delivery deadline and will possibly feature unexpected summer buying. It is currently report that because of skilled labor shortage for tool and die work, automotive companies are seeking men from the machinery industries to cover the current season's peak.

Metropolitan

A leading distributer reports the final week of June as swelling the total machine volume for the month to the highest monthly figures of the year. The result was extremely satisfactory as practically every line handled was involved in a total of orders which did not include a single large order. Single units predominated, with a few orders up to three machines.

Eastern

Territories east of Buffalo report a satisfactory June. The final 10 days swelled the total because of the June 29 dead-line on miller orders not subject to a 10 per cent price advance. Coverages involved an unexpected number of small shops in scattered localities. June held well in replacement buying.

Chicago

Activity in tool room equipment is noticed. Fifty per cent of current sales are estimated to involve special machinery. Allis-Chalmers is working on Springfield, Ill., and Milwaukee programs for late summer or early fall placement. Agricultural implement programs are progressing to probable September-October releases. It is held that railroads will continue in the market for some little time.

Cleveland

A local screw machine builder entered June orders in excess of March, April and May combined; about one-third were on foreign orders, and two-thirds well scattered over wide domestic areas. Inquiry is good for tool room equipment, but the automotive industry is slow on releases of fixture details. June turret lathe demand did not reach that of May although it was well up in comparison.

Pittsburgh

Heavy mill equipment backlogs were augmented during the week by orders for a blooming mill and a six-stand billet mill from a Mid-West steel company. Machine tool inquiries are maintained and feature definite buying interest. Worn-out condition is no longer the necessary forerunner of replacement orders.

Cincinnati

A Government order for 26 lathes served to maintain a good monthly average. Foreign demand, particularly for millers in small unit orders, increased slightly. Drilling machines were moderately active, and heavy machines lagged during the week.

Buffalo

A press manufacturer reports the air-conditioning industry as active in power-operated equipment. Contractors are said to be calling for late information on adaptabilities for assembly and installation use.

A Unique Tin Plate

(CONCLUDED FROM PAGE 23)

body. In fact, F. C. Blank, of the food research section of the Bureau of Commerce, Department of Agriculture, has gone so far as to feed humans various foods containing tin and tin salts, and the final decision was that even comparatively large quantities of tin are not prejudicial to health.

Everyone knows that tin is used for holding foods, inasmuch as the tin can for many years has been the most common of containers. But it is not generally known that a great many difficulties have had to be solved in order to make the tin can fool-proof. These difficulties have all had their origin in corrosive attack, and this attack is generally accelerated by imperfections in the tin coating. In cases where the tin plate is subject to acid corrosion, such as in fruit packing, etc., the action of pores in forming couples of the type tin (electrolyte) iron, accounts for such failures as hydrogen swells, while the more objectionable type of blackening sometimes encountered in packs of marine products is due to the formation of iron sulphides, made possible by exposure of the steel base.

Also, certain fruits which contain reducible substances, such as the anthocyanin coloring matter of red fruits, or the nitrate contained in the pumpkin, tend to give trouble owing to the stimulated attack on the tin. In such cases lacquering of the cans is resorted to, which though preventing the discoloration caused by dissolved tin, often gives rise to a greater imminence of perforations, since the steel base, if exposed, is now denied both cathodic protection and the protection due to dissolved tin.

Attack of unlacquered fruit cans usually takes the form of a slight etching of the tin all over its surface, and attack of the steel base at isolated points where the coating is most porous. This latter attack is mainly found near the seams of the can, where severe mechanical stress has been applied; it is well established that bending or other stress increases porosity, probably by converting potential pores into actual ones. Apart from the production of hydrogen swells or springers, which render a can unmarketable, even slight corrosion inside a can is objectionable in that consumers frequently regard its presence as indicating a lack of quality in the fruit. It is thus of importance to both tin plate manufacturers and canners that corrosion should be rendered as small as possible. A *non-porous plate would solve this difficulty.*

Another type of can corrosion is the discoloration, by a blackish film, of cans containing fish, certain vegetables, and cream. It is thought that iron sulphide is often the cause of this; the foodstuffs showing it are not sufficiently acid to prevent its precipitation by the traces of sulphide present. *Evidently a less porous tinplate would here be desirable.*

The corrosion of tin plate vessels by domestic liquors, which has led to a widespread displacement of the material by aluminum in this field, has received much less study than that devoted to cans by the canning interests. The unsightly appearance of rust spots is undoubtedly a drawback to the use of tin plate in the kitchen. It may be noted that under aerated saline conditions, tin is usually *cathodic* to iron, and steel base corrosion proceeds apace. *Here again it would seem that reduction in porosity would be of value.*

Thus there is no denying that the tin plate of today is not a perfect product. Admittedly, mills deliver a plate which is the best produced by existing means, and can makers do a remarkably good job in overcoming the effects of porosity. The one fact remains, however, that it has so far been found impossible to commercially manufacture tin plate by the hot-dip process entirely free from minute faults in the tin coating. There are various factors which result in a number of minute cavities which extend through the tin coating to the steel base. Some investigators attribute such porosity to the evolution of hydrogen occluded in the white pickling operation, while others have considered their formation to be due to dirt, in one form or another.

Whatever the cause, the relative freedom from pores has come to be recognized as one of the chief factors determining the quality of tin coatings for most industrial purposes. There is some difference in the pore count for the products of various makers, but even the best quite often show over 70 pores per sq. in. with a tin coating of 1.5 lb. per base box. In comparison the writer has seen laboratory samples of this new plate showing less than a dozen pores per sq. ft. or 144 sq. in. Therefore, if electro-tinning can show a sizable reduction in this pore count, or if it can show zero porosity, there would be little room for debate concerning the value of such a product. Furthermore, if this reduced porosity is accompanied by the elimination of grease lines, mottles, dry patches, crystallites, and yellow stain, at little or no additional cost to the consumer, then tin plate can be said to have been improved practically to perfection.

Grand Rapids Gas Light Co., Grand Rapids, Mich., plans new welded steel pipe line from gas field district in New Haven Township, Gratiot County, Mich., to connect with present steel pipe line of company in Six Lakes gas field area, about 20 miles, for natural gas transmission, including steel pipe lines for gathering service in first noted territory.

City Engineering Commission, Martin Building, Birmingham, closes bids July 7 for about 86,000 ft. of 60-in. welded steel pipe, complete with couplings, etc., for main line of new industrial water supply project. Bond issue of $4,000,000 has been authorized for entire development.

United States Engineer Office, Vicksburg, Miss., asks bids until July 7 for four sections of steel suction pipe and three sections of steel discharge pipe (Circular 328); until July 17 5000 ft. each of 2 and 3-in. wrought steel pipe; 500 ft. each of ½ and ¾-in. galvanized steel pipe (Circular 325).

White Eagle Oil Corp., Federal Reserve Building, Kansas City, a subsidiary of Socony-Vacuum Oil Co., 26 Broadway, New York, has placed contract with National Tube Co., Pittsburgh, for 8000 tons of 6-in. welded steel pipe for new line from oil refinery at Augusta, Kan., to Topeka, Kan., and continuing to Kansas City, Kan., about 178 miles, for gasoline transmission. Entire project will cost close to $5,000,000.

Stanolind Pipe Line Co., Tulsa, Okla., plans 6-in. welded steel pipe line in Stonewall Street, Oklahoma City, Okla., about 7000 ft., for oil transmission. S. M. Briscoe is company engineer.

Cedar Rapids Gas Co., 327 Third Street, S.E., Cedar Rapids, Iowa, plans steel pipe lines for gas transmission in Cottage Grove Avenue, Schaeffer Drive and other streets, totaling about 4150 ft.

National Dry Ice Corp., Niland, Cal., plans welded steel pipe line with welded joints from natural gas fields in Imperial Valley to new dry ice manufacturing plant in course of construction at first noted place, for gas transmission for operation. Cost over $50,000. W. E. Morse is president.

Steel Engineers to Broaden Activities

EFFECTIVE August 1, the name of the Association of Iron and Steel Electrical Engineers will be changed to Association of Iron and Steel Engineers. In making this announcement, G. R. Carroll, president of the association, and electrical superintendent, Jones & Laughlin Steel Corp., Aliquippa, Pa., said that this change in name had just been approved by the membership in a recent voting.

In commenting on the activities of the association, Mr. Carroll stated that it was first formed to promote a more scientific development of electrical equipment used in the steel industry, later branching out until it now encircles a much broader scope of activities.

"Originating from preliminary meetings of electrical engineers from several steel companies in 1907," said Mr. Carroll, "it has made numerous major contributions to the development of present-day steel making practice and to the practical education of steel maker and engineer.

"Standardization of equipment represents an important contribution to the steel industry by the association and includes one of the most revolutionary and important changes in steel mill practice—the adoption of motors for the main drives of all classes of mills to replace steam engines."

Aircraft Meeting for Pacific Cost Planned

GOVERNOR FRANK F. MERRIAM of California has joined with aeronautical men of the country to act as an advisory committee for the national aircraft production meeting of the Society of Automotive Engineers which will be held at the Ambassador Hotel, Los Angeles, October 15, 16 and 17. The gathering will be the first ever dealing specifically with aircraft manufacturing problems by any organization and will record the progress of the airplane industry from a preponderance of hand work toward mass production methods. Air transportation and maintenance problems also will be discussed.

The general committee for the meeting will be headed by Carleton Edward Stryker, chief engineer, Curtiss-Wright Technical Institute, Glendale, Cal., while on the advisory committee will be Donald W. Douglas, president, Douglas Aircraft Co.; Dr. Robert A. Millikan, president, California Institute of Technology; Alvin P. Adams, president, Western Air Express Corp.; Brig. Gen. H. B. Clagett, commanding officer, March Field; R. H. Fleet, president, Consolidated Aircraft Corp.; Robert E. Gross, president, Lockheed Aircraft Corp.; J. H. Kindelberger, president, North American Aviation, Inc.; Major C. C. Moseley, manager, Grand Central Air Terminal; Robert Porter, president, Kinner Airplane & Motor Corp., Ltd.; John K. Northrop, president, Northrop Corp.; Dr. Robert G. Sproul, president, University of California; Dr. W. F. Durand, Leland Stanford University; Dr. R. B. von Kleinsmid, president, University of Southern California, and Howard Hughes, president, Hughes Aircraft Co.

National Association of Flat-Rolled Steel Manufacturers, Pittsburgh, has moved its offices from 565 Frick Building Annex to 2445 Oliver Building.

Manufacturers of Machinery and Maintenance Engineers have found that INSUROK Gears make for quiet operation, greater efficiency, and insure longer life for their equipment.

Your regular gear cutter can supply you with any quantity of INSUROK gears in the style and of the size to fit your requirements.

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PLANT EXPANSION AND EQUIPMENT BUYING

. . . Standard Oil Co., Cleveland, plans expansion and improvements at Toledo, Ohio, refinery, to cost $1,500,000.

o o o

. . . Consumers Power Co., Jackson, Mich., will spend $500,000 for additions to power plant at Battle Creek, Mich., and extensions in transmission lines.

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. . . American Smelting & Refining Co. will expand sulphuric acid works at Garfield, Utah, at a cost of $200,000.

NORTH ATLANTIC

Board of Transportation, New York, 250 Hudson Street, asks bids until July 7 for rails, frogs, switches and kindred equipment for rapid transit railroads (Order No. 67). William J. Daly is secretary.

Solomon Brothers, foot of East Sixth Street and East River, New York, coal, have leased property at foot of East Thirty-first to Thirty-second Streets, for new coal storage and distributing plant, with installation of bunkers, conveyers, loaders and other mechanical-handling equipment. Cost over $50,000 with equipment.

Signal Corps Procurement District, Army Base, Fifty-eighth Street and First Avenue, Brooklyn, asks bids until July 10 for three gasoline engine-driven generators (Circular 1); until July 14, for 10,000 ft. rubber insulated power cable (Circular 2).

Imperial Paper & Color Corp., Glens Falls, N. Y., has let general contract to Howard Ramsey, 42 Notre Dame Street, for new steam power house at mill. Cost about $50,000 with equipment.

American Smelting & Refining Co., 120 Broadway, New York, plans expansion and improvements in sulphuric acid works at Garfield, Utah, with new buildings and equipment. Cost over $200,000 with machinery.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until July 7 for eight forced draft blowers and spare parts (Schedule 8255), 20 oil-burning signal lights and 1000 oil-burning hand lanterns (Schedule 8301); until July 10, 600 storage battery testing outfits (Schedule 8298) for Brooklyn Navy Yard.

Port of New York Authority, 111 Eighth Avenue, New York, has let general contract to George Colon Construction Co., 103 East 125th Street, for four-story and penthouse mechanical ventilation building at Eleventh Avenue and West Thirty-ninth Street, for new Hudson Midtown Tunnel, at $427,000, exclusive of mechanical draft and other machinery.

United States Engineer Office, First District, New York, asks bids until July 6 for wire rope for Waterbury, Vt. (Circular 493); one two-stage single phase air compressor with 32-gal. tank (Circular 492), six gasoline engine-driven centrifugal pumps (Circular 494) for New Hampton, N. Y.; pinion and coupling flange for cutter engine (Circular 496).

New York Industrial Terminal, New York, care of William Ginsberg, 331 Madison Avenue, engineer, has plans for new 10-story industrial terminal on Eleventh Avenue, between Twenty-seventh and Twenty-eighth Streets, totaling 50,000 sq. ft. floor space. Cost over $500,000 with mechanical-handling, conveying, loading and other equipment.

Richfield Oil Corp., 19 West Fiftieth Street, New York, plans new bulk oil storage and distributing plant at Utica, N. Y., including five steel storage tanks and other equipment. Cost about $50,000.

Superintendent of Lighthouses, St. George, Staten Island, New York, asks bids until July 9 for about 8460 lb. of 1⅝-in. diameter open link, wrought iron buoy chain, and seven bridle chains, about 2130 lb. (Proposal 51615).

National Casket Co., 122 First Street East, Cambridge, Mass., manufacturer of metallic caskets, vaults, etc., has plans for new three-story factory branch, storage and distributing plant at Albany, N. Y. Cost over $50,000 with equipment.

Townsend Lawn Mower Co., 266 Glenwood Avenue, Bloomfield, N. J., has acquired former local mill of Diamond Mills Paper Co., totaling about 45,000 sq. ft. floor space, on 3½-acre tract, and will remodel for new plant for increased capacity.

Western Wire Forming Corp., 80 Duryea Street, Newark, N. J., manufacturer of wire goods, has leased space in building at St. Francis and East Ferry Streets for new plant, removing present works to new location and increasing capacity.

Keystone Structural Steel Co., Trenton, N. J., recently organized by Robert M. Barbour, heretofore vice-president of Barbour Brothers Steel Co., Inc., 100 Marion Street, and associates, has acquired property, 250 x 500 ft., on North Olden Avenue, Ewing Township Extension, for new steel fabricating works. Initial unit will be one-story, about 25 x 100 ft., with office building adjoining. Other buildings are planned for later. James L. O'Rourke, 317 Park Avenue, engineer for Hamilton Township, will be an official of new organization.

Commanding Officer, Ordnance Department, Frankford Arsenal, Philadelphia, asks bids until July 28 for one single-acting, open-back press (Circular 542), one motor-driven, automatic machine, four slides wire-forming, floor space type (Circular 541).

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until July 7 for one motor-driven metal saw for Philadelphia Navy Yard (Schedule 8286).

Binghamton Flexible Shaft Co., Johnson City, N. Y., whose plant was completely destroyed by fire in 1933, has received settlement of that loss and is operating in temporary quarters. Company is in position to give immediate service on all items formerly furnished.

BUFFALO DISTRICT

Board of Public Utilities, City Hall, Jamestown, N. Y., will soon take bids for extensions and improvements in municipal electric power plant, including new 12,500-kw. turbo-generator unit and auxiliary equipment. Cost close to $500,000 with equipment. Peter F. Loftus, Grant Building, Pittsburgh, is consulting engineer. C. O. Johnson is superintendent at plant.

Iroquois Beverage Corp., 230 Pratt Street, Buffalo, has let contract for structural steel framing for two-story addition to brewery, 100 x 100 ft., to Ernst Iron Works, Inc., 75 Lathrop Street, comprising part of expansion and improvement program. Entire project will cost close to $450,000 with equipment. Julius C. Schultz, 1370 Main Street, is architect.

Board of Education, Ogdensburg, N. Y., plans manual training department in new three-story high school, for which new bids will be asked soon on general contract. Bids recently received have been rejected. Cost about $400,000. Financing has been arranged through Federal aid. Randall & Vedder, S.A.&K. Building, Syracuse, N. Y., are architects.

NEW ENGLAND

Westinghouse Electric & Mfg. Co., Page Boulevard, Springfield, Mass., has asked bids on general contract for two-story addition, 40 x 320 ft. Cost over $100,000 with equipment. Headquarters are at East Pittsburgh.

Homer D. Bronson Co., Beacon Falls, Conn., manufacturer of automobile hardware, sheet metal stampings, etc., has plans for two-story addition, 50 x 84 ft. Cost over $40,000 with equipment.

Commanding Officer, Ordnance Department, Springfield Armory, Springfield, Mass., asks bids until July 6 for 214 pieces seamless steel tubing, 46 ft. long, and for 214 pieces similar tubing, 68 ft. long (Circular 252).

Armour & Co., Union Stock Yards, Chicago, has let general contract to Brown Construction Co., 526 Congress Street, Portland, Me., for new plant at Portland, comprising two one-story units, 55 x 100 ft. and 25 x 65 ft. Cost close to $75,000 with equipment.

Hull Brewing Co., Bond Street, New Haven, Conn., has asked bids on general contract for two-story and basement addition, 60 x 100 ft., primarily for a mechanical-bottling works. Cost about $50,000 with equipment. A. M. Thomas and Harold H. Davis, 29 Whitney Avenue, are engineer and architect respectively.

Cocheco Woolen Mills, East Rochester, N. H., plan installation of an electric generator unit and auxiliary equipment for power service at mill, replacing present water power facilities. Cost close to $40,000.

Moore Drop Forging Co., Walter Street, Springfield, Mass., has let general contract to A. J. Daniels, Shrewsbury, Mass., for one-story addition, 60 x 250 ft. Cost over $75,000 with equipment.

WASHINGTON DIST.

General Purchasing Officer, Panama Canal, 1435 K Street, N.W., Washington,

asks bids until July 6 for two brake-testing machines, pipe vises, structural wrenches, monkey wrenches, Stillson wrenches, twist drills, breast drills, die stocks, bolt dies, phosphor bronze wire, conduit bushings, boilermakers' ratchets, bolt clippers, screw clamps, chopping axes, wood chisels and other equipment (Schedule 3158); until July 7, three metal-working lathes, one metal-working punch and shear, one column shaper, two dry floor metal-grinding machines, one radial drill and one power hacksaw, all motor driven (Schedule 3159).

Department of Public Works, Water Bureau, City Hall, Baltimore, Leon Small, engineer, plans new 4,000,000-gal. steel storage tank and auxiliary equipment to replace present reservoir unit near Fredericks Road and Edmondson Avenue. Cost about $100,000.

Bureau of Yards and Docks, Navy Department, Washington, asks bids (no closing date stated) for one 6000-kw. turbo-alternator and auxiliary equipment for Norfolk Navy Yard (Schedule 7950).

Calvert-Maryland Distilling Co., Inc., Relay, Md., has begun superstructure for new multi-story storage and distributing building at local distillery. Cost over $125,000 with equipment.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until July 7 for one boat crane hoisting and rotating equipment (Schedule 8259) for Philadelphia Navy Yard; 22,000 finished gears complete, and 22,000 finished pinions complete (Schedule 8197); until July 10, ventilation terminal heaters (Schedule 8217), steel tubing (Schedule 8257) for Eastern and Western yards; until July 14, 18,000 ft. insulated electric cable for arc welding (Schedule 8272) for Philadelphia and Mare Island yards.

SOUTH ATLANTIC

Duke Power Co., Charlotte, N. C., plans transmission and distributing lines for rural electrification in McDowell, Polk, Burke and other counties, about 50 miles, with service facilities. Cost about $80,000 with equipment.

Atlantic Ice & Coal Corp., 37 North Thirteenth Street, Chattanooga, Tenn., M. R. Hurgins, head, plans new multi-story brewing plant at Orlando, Fla. Storage and distributing building will be erected. Entire project will cost about $250,000 with equipment.

Dillon Coca Cola Bottling Co., Dillon, S. C., has low bid from Southeastern Construction Co., 218 West Second Street, Charlotte, N. C., for new one-story mechanical-bottling works. Cost about $35,000 with equipment. Pringle & Smith, Norris Building, Atlanta, are architects.

SOUTH CENTRAL

Armour & Co., Union Stock Yards, Chicago, has let general contract to Gunite Concrete & Construction Co., 1301 Woodswether Road, Kansas City, Mo., for extensions and improvements in cottonseed oil mill at Memphis, Tenn., formerly plant of Memphis Cotton Oil Mill, recently acquired. Cost about $100,000 with equipment.

United States Engineer Office, Vicksburg, Miss., asks bids until July 7 for steel castings, including ball joints, trunnion bearings, elbows, throat liners, stuffing box, offset bends, manhole covers, etc. (Circular 329); until July 16 for 5000 ft. of launch steering cable, 3/8-in. diameter (Circular 323).

Rodessa Gasoline Co., 923 East King Highway, Shreveport, La., has approved plans for new gasoline refinery at Ida, La., with compressor extraction department, storage and distributing facilities. Cost over $100,000 with equipment. Herbert E. Dickard & Co., Monroe, La., are consulting engineers in charge of construction.

Director of Purchases, Tennessee Valley Authority, Knoxville, Tenn., asks bids until July 10 for nine heavy type oil circuit breakers and accessories for power substation in Tennessee Valley area; until July 14, belt conveying equipment, including steel supporting structure, for Wilson Dam Fertilizer Works.

Common Council, Union Springs, Ala., asks bids until July 9 for municipal Butane-air gas plant, including about 50,000 lin. ft. of pipe lines for distribution. R. L. Kenan & Associates, Bell Building, Montgomery, Ala., are consulting engineers.

United States Engineer Office, foot of Prytania Street, New Orleans, asks bids until July 6 for three steam boilers with auxiliary equipment (Circular 658); until July 9, one all-welded composite wrought iron and steel self-propelled mechanical hyacinth destruction plant (Circular 317).

SOUTHWEST

Blatz Brewing Co., 3117 Southwest Boulevard, Kansas City, Mo., has asked bids on general contract for one-story addition, 55 x 75 ft., for storage and distribution. Cost about $40,000 with equipment. George Lehle, 111 West Washington Street, Chicago, is architect. Company headquarters are at Milwaukee.

James R. Kearney Corp., 4236 Clayton Avenue, St. Louis, manufacturer of electric power line hardware, line fittings, etc., has let general contract to H. B. Deal & Co., 1218 Olive Street, for two-story addition, 65 x 125 ft., first floor primarily for assembling. Cost close to $125,000 with equipment.

St. Louis Spring Co., 3135-39 Washington Avenue, St. Louis, manufacturer of steel automobile springs, has acquired former plant of St. Louis Frog & Switch Co. for expansion.

City Council, Iola, Kan., will take bids at once for extensions and improvements in municipal electric power plant, including new steam turbo-generator unit and accessories, and other equipment; also for distributing lines. Cost about $225,000. Paulette & Wilson, National Reserve Building, Topeka, Kan., are consulting engineers.

Magic City Products Co., Sand Springs, Okla., meat packer, has leased local building and will remodel for new canning plant. Cost about $40,000 with machinery.

Reed Roller Bit Co., Mack Street, Houston, Tex., manufacturer of oil well equipment and parts, is erecting one-story addition, for which general contract recently was let to S. D. Cook Co., Houston. Cost close to $40,000 with equipment.

WESTERN PA. DIST.

Armstrong Cork Co., Eighth Avenue, Beaver Falls, Pa., has plans for one-story addition. Cost over $100,000 with equipment. Main offices of company are at Lancaster, Pa.

Standard Oil Co., Charleston, W. Va., has plans for extensions in bulk oil storage and distributing plant, with installation of new steel tank and other equipment. Cost close to $30,000 with equipment.

Board of Education, High School Building, Johnstown, Pa., plans manual training department in new two-story and basement Cochran junior high school. Cost about $150,000. Financing has been arranged through Federal aid. H. M. Rogers, Johnstown Trust Building, is architect.

Domestic Coal & Coke Co., Fairmount, W. Va., will make improvements in barge-loading and distributing facilities at local harbor on Monongahela River, including installation of a conveyor system with revolving crane and other equipment.

OHIO AND INDIANA

Standard Oil Co. of Ohio, Midland Bank Building, Cleveland, has plans for expansion and improvements in oil refinery at Toledo, including new distilling unit and gasoline refining machinery. It is planned to begin work during summer and complete project in spring of 1937. Cost about $1,500,000 with equipment.

Motch & Merryweather Machinery Co., 888 East Seventieth Street, Cleveland, has let general contract to Bolton & Pratt Construction Co., 1270 West Third Street, for one-story addition. Cost over $45,000 with machinery.

Addressograph-Multigraph Corp., 1200 Babbitt Road, Cleveland, has leased three-story building at 1410 Chardon Road, about 40,000 sq. ft. floor space, for expansion.

Everhard Mfg. Co., Canton, Ohio, manufacturer of window ventilators, metal frame screens, water heaters, etc., has plans for one-story addition. Cost over $40,000 with equipment.

Barrett Co., 2762 Front Street, Toledo, manufacturer of roofing products, plans extensions and improvements, including steel tanks for tar service and other equipment. Cost close to $50,000 with equipment. Headquarters are at 40 Rector Street, New York.

Contracting Officer, Materiel Division, Wright Field, Dayton, Ohio, asks bids until July 7 for two gyro control mount assemblies (Circular 1012); until July 10, one 8-in. electric-operated molder (Circular 1009); until July 13, 100 rewind drive impellers (Circular 1011).

Coca-Cola Bottling Works, Inc., Evansville, Ind., has asked bids on general contract for new one and two-story bottling plant, 50 x 155 ft., and 25 x 120 ft. Cost over $60,000 with equipment. E. C. Berendes, 121 N. W. Fourth Street, is architect.

Delco-Remy Corp., Anderson, Ind., manufacturer of automobile starting and lighting equipment, parts, etc., has plans for one-story addition, 150 x 200 ft., in part for storage and distribution. Cost over $80,000 with equipment. Company is a division of General Motors Corp.

Wayne Pump Co., Fort Wayne, Ind., manufacturer of pumping machinery and parts, has plans for addition to steam power plant, to include installation of two 300-hp. boiler units and accessories, automatic stokers and other equipment, with coal bunkers and coal-handling equipment.

Board of Education, Toledo, will begin construction of new vocational high school at Monroe, 15th, Washington and 16th Streets, about Aug. 1, for which financing totaling about $1,000,000 is being arranged through Federal aid. Equipment purchases will amount to close to $350,000.

MICHIGAN DISTRICT

Buick Motor Co., Flint, Mich., has let general contract to Karl Foster, Flint, for one and two-story addition, 150 x 150 ft., including crane runway. Cost over $100,000 with equipment.

Clarage Fan Co., Kalamazoo, Mich., manufacturer of mechanical draft fans, parts, etc., has plans for one-story top addition to present plant, 130 x 160 ft. Cost over $70,000 with equipment. Stewart-Kingscott Co., Kalamazoo, is architect and engineer.

Board of Water and Light Commissioners, Lansing, Mich., has authorized plans for new municipal steam-operated electric power plant for light and power distribution and central steam-heating service. Cost close to $2,500,000 with equipment, pipe lines, electric system, etc.

Alma Trailer Co., Alma, Mich., manufacturer of automobile trailers and parts, has plans for remodeling former local plant of Republic Truck Co., lately acquired, for expansion. Company is arranging for sale of stock to total about $85,000, considerable part of fund to be used for purpose noted.

Consumers Power Co., Jackson, Mich., has plans for addition to steam-electric generating plant at Battle Creek, Mich., with installation of new turbo-generator unit and accessories, high-pressure boilers and other equipment. Extensions will be made in transmission lines in this district. Cost over $500,000 with equipment.

Grand Rapids Brewing Co., Muskegon, Mich., has begun construction of additions to local brewery for expansion in main brew-house and bottling works. Cost over $50,000 with equipment.

MIDDLE WEST

Vail Mfg. Co., 1752 East Seventy-fifth Street, Chicago, manufacturer of stationers' hardware, wire goods, etc., has let general contract to Campbell-Lowrie-Lautermilch Co., 400 West Madison Street,

for new one-story plant, 125 x 394 ft., at East Ninety-fifth Street and Cottage Grove Avenue, to provide about 50,000 sq. ft. floor space. Company will remove to new location and increase capacity. Cost over $100,000 with equipment. Benjamin F. Olson, 19 South LaSalle Street, is architect.

United States Engineer Office, Clock Tower Building, Rock Island, Ill., asks bids until July 21 for new dam No. 21, Mississippi River, near Quincy, Ill., including roller gates and operating machinery, tainter gates and operating equipment, electrical system, electric grounding system, motors, brakes, controllers, switches, locomotive crane and crane track, gate heaters, etc.

Hollup Corp., 3351-61 West Forty-seventh Place, Chicago, manufacturer of welding rods and kindred equipment, has let general contract to A. L. Herlin & Son, 6816 Clyde Avenue, for one-story addition, 78 x 128 ft. Cost over $45,000 with equipment. A. Epstein, 2001 West Pershing Road, is architect and engineer.

City Council, Perry, Iowa, plans new municipal electric light and power plant, also distributing system. Special election has been called July 9 to vote bonds for $325,000 for project, on which work is scheduled to begin at early date.

City Council, Sleepy Eye, Minn., A. J. Thomas, city clerk, asks bids until July 7 for coal-handling equipment for power plant, including track hopper, elevator, conveyer, weighing hopper, scale, coal bunker, etc. G. M. Orr & Co., Baker Arcade, Minneapolis, are consulting engineers.

Zenith Radio Corp., 3620 South Iron Street, Chicago, has acquired former local plant of Grigsby-Grunow Co., manufacturer of similar equipment, bankrupt, on bid of $410,000. Property consists of two two-story and two one-story manufacturing units, with storage and distributing building and two-story office structure, totaling 552,150 sq. ft. floor space. Purchasing company will use for expansion and later concentrate entire production at new location, including parts maufacture and assembling. Hugh Robertson is vice-president and treasurer.

Blackhawk Mfg. Co., 121 North Broadway, Milwaukee, has leased former plant of Kempsmith Mfg. Co., milling machines, at Forty-fifth and Rogers Streets, West Milwaukee, containing upward of 100,000 sq. ft., for occupancy late this summer. Contracts have been placed for remodeling at cost of $20,000. Present equipment for production of hydraulic service jacks will be supplemented substantially in new factory.

J. E. Gilson Co., Port Washington, Wis., manufacturer of precision gray iron castings, will invest from $15,000 to $20,000 in addition to cleaning room, supplementing enlargement of core room within past year. Further expansion is in prospect later this year.

◀ PACIFIC COAST ▶

Lockheed Aircraft Corp., West San Fernando Road, Burbank, Cal., is acquiring 9-acre tract adjoining local Union Air Terminal as site for new plant, totaling over 100,000 sq. ft. floor space. Cost close to $400,000 with equipment.

Barron Gray Packing Co., Fifth and Martha Streets, San Jose, Cal., fruit packer, has let general contract to Megna & Newell, 838 Minnesota Avenue, for one-story addition for storage and distribution. Cost about $45,000 with mechanical-handling, air-conditioning and other equipment. W. D. Lotz, 1040 Benton Street, is architect.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until July 7 for one motor-driven engraving machine for San Pedro, Los Angeles, Navy Yard (Schedule 8213); until July 10, 300 seamless steel boiler tubes for Mare Island yard (Schedule 8260), medium carbon steel nuts, steel machine screws and sheet metal screws for Puget Sound yard (Schedule 8252).

Round Valley High School District, Covelo, Mendocino County, Cal., will take bids soon for one-story vocational training shop at local high school. Cost about $40,000. C. A. Caulkins, Rosenberg Building, Santa Rosa, Cal., is architect.

Pension Oil Co., Bakersfield, Cal., operating at former refinery of Producers' Oil Co., converted for gasoline refining, plans rebuilding part of plant recently destroyed by fire, caused by explosion. Loss over $75,000 with equipment.

Shell Oil Co., 1008 West Sixth Street, Los Angeles, has plans for new bulk oil storage and distributing plant near Bakersfield city limits, with steel tanks and other equipment. Cost over $60,000 with equipment.

San Francisco Bay Exposition, Inc., Financial Center Building, San Francisco, Leland W. Cutler, president, has asked bids on general contract for two permanent airplane hangars at site of 1939 World's Fair, Yerba Buena Shoals, with repair and reconditioning shops. Cost about $675,000 with equipment. W. P. Day, director of works, address noted, is architect and engineer.

◀ FOREIGN ▶

Mexican Petroleum Co., Ltd., Mexico, D. F., operating in oil field district at Tampico, Mexico, an interest of Mexican Federal Government, plans new oil refinery, comprising several units, with steel tanks for storage and distribution. Cost close to $500,000 with machinery, considerable of which will be purchased in United States. Ortiz Rubio, former president of Mexico, is president of company.

Canadian Celanese, Ltd., Drummondville, Que., manufacturer of cellulose rayon products, plans additions to mill, with installation of machinery for large increase in present capacity. Cost about $750,000 with equipment. Company is disposing of stock to total close to $1,000,000 for financing project.

LETTERS TO THE EDITOR

Editor, The Iron Age:

I note your editorial in the June 4 issue. I am one of the rare "birds" in the steel business favorable to the New Deal. So you will have to take my views for what they are worth and with some charity.

I agree with your correspondent about the futility of your political activities, but think his threat to cut off his subscription is silly and shows his small mind. After all THE IRON AGE is a time honored institution and a valuable asset to a great business. I know I need it in my business and value it highly.

But after all why antagonize the present administration? The steel business has troubles enough without drawing any more adverse fire. You have certainly prospered under the New Deal. *Your* paper, for instance, *shows it.* You got a lot of help out of NRA and the steel code. We are really still working under it and would be even better off if we had some effective enforcement agency. There is a lot of "hooey" about this cry of "bureaucracy" and "regimentation". Your tactics only aid and assist the proposed move to organize the industry by Mr. Lewis. And you are aiding and abetting the radicals in future attacks on the ground of monopoly. Why even the Republican Party is going to introduce a strong plank in the platform designed to curb monopoly and the steel crowd will be one of the *first to be hit.*

It would be much more sensible to play along with the Democratic Party and Mr. Roosevelt. Every sane man with any political sense at all knows that Roosevelt will be elected overwhelmingly. Better get on the band wagon, or at least lay off the attacks. It's smarter.

Of course, I know you are sincere, and believe the country's business and institutions are menaced, but why not let other agencies fight this battle?

You really don't help any as 95 per cent of *your* readers agree with you and you are only "carying coals to Newcastle."

For the life of me I can't see the sense of drawing the *New Deal* or the *radical fire* in the way you have been doing. If Mr. Borah has his way, and *he probably will,* you are just as likely to be attacked under a Republican administration as under a Democratic one.

—

Editor, The Iron Age:

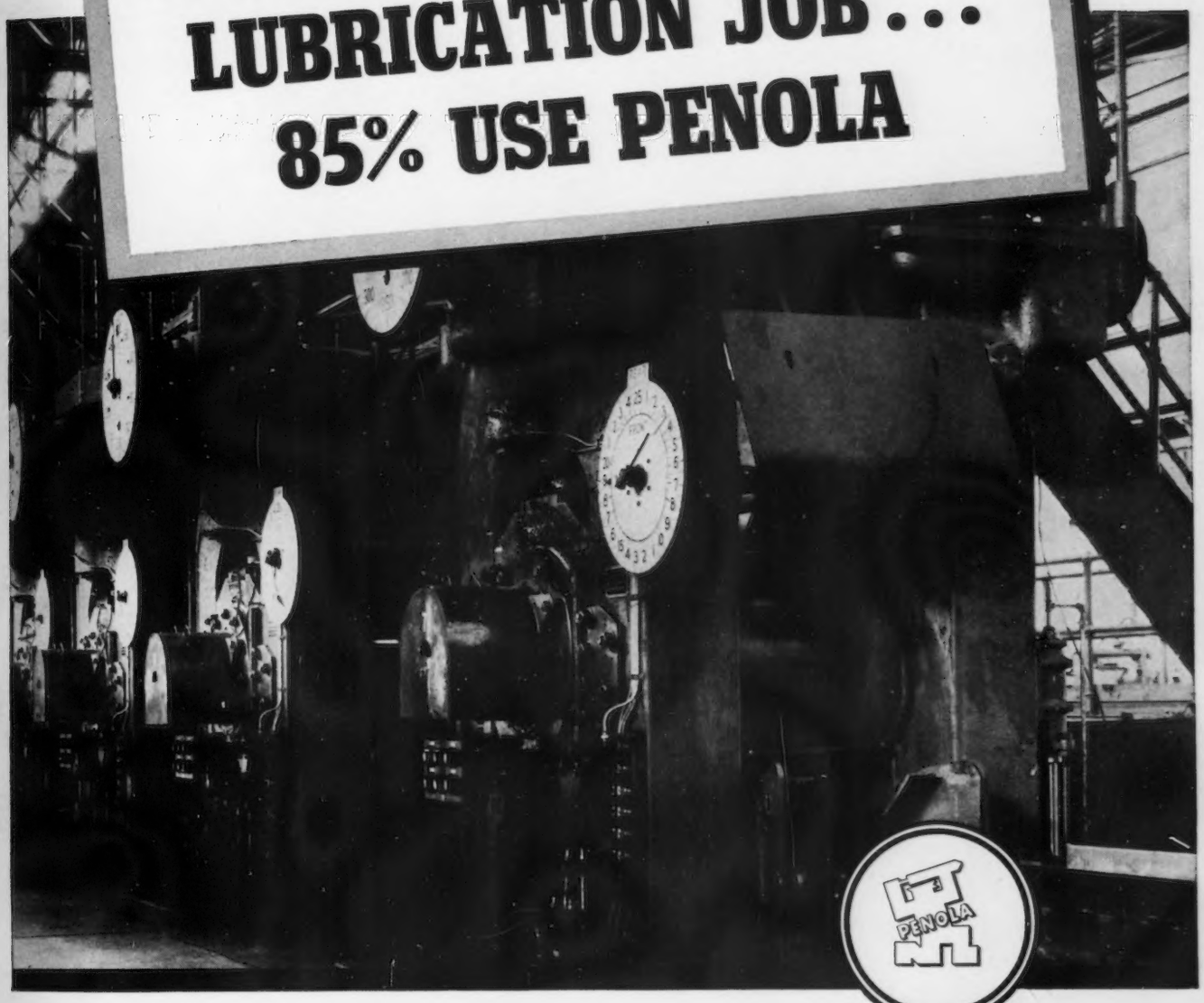
Just read your editorial of June 4.

Am very sorry one of your subscribers has taken offense at your editorials which he terms as G.O.P. junk.

In case he should cancel his subscription please let me know and I have some X. new dealers that are so disgusted with their own junk they will be glad to take THE IRON AGE for the inspiration they will get from your editorials.

Believing that the practical plant man will welcome detailed information on processes in which its products are involved, rather than pure advertising of the products themselves, E. F. Houghton & Co., Philadelphia, have instituted a new type of publication called "Research, Illustrated." The first edition was devoted to textile processing. Other editions now being prepared include Transmission, Lubrication and Metal Working.

FOR STEEL'S TOUGHEST LUBRICATION JOB . . . 85% USE PENOLA



WHEN engineers built four-high continuous mills with roll neck roller bearings, they created the need for a new lubricant. In the giant new equipment, pressures up to 5,000,000 pounds per bearing are developed. Previously existing lubricants—"soap filled greases"—broke down under this service and bearing failures were a major item of operating expense.

Penola developed a lubricant which withstands over three times more pressure than previous lubricants were capable of. Under such conditions it's easy to understand why Penola lubricates over 85% of this equipment. In fact, Penola makes and sells more steel mill lubricants than any other company in the world.

Consult Penola whenever lubricating difficulties must be met, money saved, and protection assured.

PENOLA LUBRICANTS

PENOLA INC.
Formerly
PENNSYLVANIA LUBRICATING CO.
Pittsburgh, Pa.
Grease Works Operated at
Baltimore, Md. . Baton Rouge, La.
Eldorado, Kas. . Pittsburgh, Pa.

LUBRICATION FOR THE STEEL INDUSTRY • 1885 to 1936

The American System Sees It Through

(CONCLUDED FROM PAGE 36)

idea what to expect in this day of ours.

On the charts herewith, business volume and commodity prices have been plotted to the same scale over the Civil War and the World War phases of our National existence. The black-filled curve is that of business volume, the diagonally cross-hatched curve is that of wholesale commodity prices. The first gives, of course, a direct measure of the fluctuations of business, while the second gives a very graphic picture of the process of deflation from war-time peak prices.

The first parallel is that each war lasted four years and was followed by a thirteen-year period of deflation of commodity prices. Each war opened with a two-year period of depression followed by two to three years of war prosperity. The primary post-war depression followed immediately upon the close of the Civil War, but was delayed two years after the World War armistice.

The primary depression was succeeded, in both cases, by seven to eight years of complete normalcy culminating in bull market booms. Then came the second, delayed and much longer post-war depression. After the Civil War secondary depression, which lasted six years, business resumed its normal ups and downs. The prolongation of the business volume curve into 1936, after the present secondary depression, shows it crossing the normal line (1910 to 1914 average) at about the middle of the year.

The over-all duration of the profound disturbance to business, i. e., from the beginning of the pre-war depression to the ending of the secondary post-war depression is four years longer for the World War than for the Civil War. This is because the primary and secondary depressions were longer getting under way after the World War, were much more severe and, hence, lasted longer.

It is difficult to imagine what greater proof of the economic soundness of the American System can be offered. If it survived two such cataclysms as the Civil War, which tore the Nation apart, and the World War, which brought the white race to the edge of ruin, it must have tremendous vitality. And that it reacted identically to both disasters indicates, beyond the possibliity of a doubt, that the System is a natural outgrowth from our physical position on the face of the Earth. Which disposes of the third question in the minds of many of our people: "Must our System yield to a better one?"

There cannot be anything better than the product of a natural evolution for in that process only the fittest survive.

Bethlehem Continuous Mill at Lackawanna

(CONCLUDED FROM PAGE 29)

straight mineral oil to all meshing points and bearings of pinion stands as well as roll bearings in hot rolls. System No. 3 services all "Mesta type" back-up roll bearings of the four-high roughing and finishing trains. System No. 4 lubricates all bearings of main motors of the roughing and finishing train in addition to certain other bearings.

System No. 5 lubricates all gear and pinion meshing points and reduction gear bearings of the 54-in. and 75-in. tandem cold mills, the tempering mills and the skin pass mills. System No. 6 takes care of the back-up roll bearings of the cold finishing tandem mills, the tempering mills and the skin pass mills. System No. 7 lubricates all bearings of all main drive and reel motors of the tandem, the tempering and the skin pass mills in the cold rolling department. All systems are fully automatic.

In addition to the oil lubricating systems, there are some 2000 antifriction bearings in the mill which are serviced, at automatically timed intervals, with grease lubrication.

o o o

MOTOR generator room of cold mill department. Here nine 1250 hp. d.c. adjustable speed motors drive the nine 4-high stands.

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